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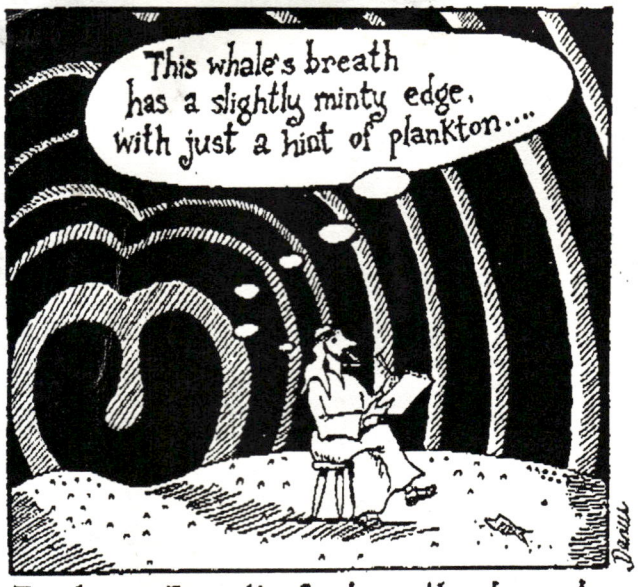
To: Mel Rosenberg
From: Louise Shaler
Darius Gilmont
03-5175218



Jonah was Israel's first mouth-odor judge.

Patient, Smell Thyself

By Steve Mirsky

Worried that you have bad breath? Unless vultures are actually circling your mouth, there's good news. The problem may not be your breath at all, but your personality.

Researchers at TAU decided to study just how bad the breath really was of 38 people whose concerns about their oral malodor drove them to seek medical attention. The researchers, led by Prof. Mel Rosenberg and Dr. Ilana Eli of the Maurice and Gabriela Goldschleger School of Dental Medicine, Sackler Faculty of Medicine, published the results in a recent issue of *Psychosomatic Medicine*. Sixteen patients had themselves come to the conclusion that they had a problem. Another 12 were driven to this conclusion – they claimed that others had complained. The last 10 were getting input from both sides, having decided for themselves that they reeked but having also found the telltale gift-wrapped bottle of mouthwash in their desk drawer.

As part of the study, the 38 subjects rated their own breath on a scale of zero to 10, where zero was presumably something like minty roses and 10 must have been whatever Linda Blair ejected onto the priest in *The Exorcist* that made him lose his faith. They also mouth breathed from a distance of 10 centimeters right into the face of an "odor judge," who similarly rated the scent from zero to 10. To put the whole thing in perspective, the odor judge produced a baseline bad-breath value by assigning a rank for a control sample: dung based fertilizer. The study subjects likewise rated the fertilizer, to prove that they did not suffer from anosmia – loss of sense of smell.

When the dust settled and the bodies were carted off, the ratings got analyzed, leading to some fascinating insights. Both the odor judge and the subjects rated the fertilizer at about nine on the stink scale. But whereas the odor judge rated the subjects on average to be far closer to mint than to manure, at 2.7, the study group assigned itself an average score suitable to grow a decent corn crop with – 6.7.

Because the patients completed a psychological profile, the researchers were able to note higher than normal values for interpersonal sensitivity and obsession compulsion. Increased interpersonal sensitivity may cause some to blame breath for their "self-consciousness and negative expectations regarding interpersonal communications," the study states, whereas obsession-compulsion can lead to "increased involvement with personal hygiene in general and with oral odors in particular." Either way, it may be of some comfort to know that bad breath, unlike beauty, may be in the mind of the nose holder.

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A Healthy Education

Recent TAU research has found a correlation between levels of education and Alzheimer's disease. According to an epidemiological study examining the frequency of the disease in relation to various factors, the more highly educated a person is, the less likely he or she is to develop the disease. Conversely, the less years a person studies, the more likely he is to develop Alzheimer's.

These findings were presented by Prof. Amos Korczyn of TAU, incumbent of the Heinrich (Yehezkel) Sieratzki Chair in Neurology and Chairperson of the Neurology Department at the TAU-affiliated Tel Aviv-Elias Sourasky Medical Center, during the inaugural ceremony of the Miriam Turjanski de Gold and Dr. Roberto Gold Fund for Neurological Research. The research was conducted by Prof. Korczyn together with Prof. Esther Kahana of Barzilai Medical Center, Ashkelon.

Studying at a young age may enhance the multiplication of the connections between brain neurons (synapses) which may then reduce the risk of developing Alzheimer's, Korczyn claimed. At a more advanced age, when the natural process of cell loss in the brain commences, people who studied at a young age are in a lower risk bracket because they have stored more brain synapses.

Results also indicated a higher frequency of the disease among women than among men as well as a greater frequency among Sephardic Jews than among Ashkenazi Jews. These differences could be traced, at least partly, to differences in education.

The researchers believe that Alzheimer's may also develop after head injury, and the possibility of the effect of traumatic events, such as the Holocaust, on its development is currently being investigated.

From left to right: Dr. Ilana Ben-Ami, Regional Vice Chairperson for Latin America and Spain, Prof. Korcyzn, Mrs. De Gold and Neomi Hasson of the Latin America & Spain Department.

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Vol. 6, No.1,2 August 2002

Breath Odor Research

Official Newsletter of the International Society for Breath Odor Research (ISBOR)

To Our Readers

As many of our members are aware, the American Dental Association (ADA) has been deliberating for some time regarding standard guidelines for testing products with claims of reducing oral malodor. Last November, the ADA held a Conference on Diagnosis and Management of Oral Malodor, in which several ISBOR members participated. Georgia Majerus (Minneapolis) was kind enough to summarize the meeting for our Newsletter. Following the meeting, John Greenman (UWE) wrote a personal commentary on some of the issues that were raised at the meeting. We are sharing John's thought-provoking views, with the hope that this will lead to further discussions. Next year, at our 6th International Conference on Breath Odour in London we hope to host one of the senior ADA scientists to present a lecture on the ADA's progress in this important endeavour.

On another note, we were delighted to receive copies of the International Dental Journal (vol. 52, supplement 3) which carries the Proceedings of the Fifth International Conference on Breath Odour held last year in Tokyo. Again, ISBOR President Prof. Hideo Miyazaki and his editorial team have done a terrific job in publishing the Proceedings within a year of the meeting. For your convenience, we have published here a list papers related to breath odor research published since 2000, including the recent Proceedings publication (if we have forgotten anything, please let us know!).

Once again, Georgia has come through with a summary of the bad breath-related abstracts presented at the 80th General Session of the IADR held in San Diego this past March. Again thanks, Georgia!

Finally, together with Prof. Crispian Scully and Dean Pateman at the Eastman Dental Institute, University College London, we are hard at work planning the 6th International Conference on Breath Odour, to be held Sept. 16-18th, 2003 in London (Please see the announcement). Soon the 2nd announcement will be ready providing details of registration, submission of abstracts, etc. Anyone wanting to suggest topics, speakers, etc. is welcome to write us.

Wishing you all a pleasant autumn,

Mel Rosenberg, Editor, Breath Odor News
Nir Sterer, Secretary-General, ISBOR

ADA Conference on Diagnosis and Management of Oral Malodor – Summary

Georgia Majerus

On November 6 - 7 2001 the American Dental Association held a conference on the diagnosis and management of oral malodor. The 65 participants consisted of representatives from academics, research, industry and the ADA. The purpose of the conference was to assist the Council on Scientific Affairs in developing guidelines for ADA acceptance of oral malodor products. The goal of the ADA is to provide guidance to dental professionals and the public in selecting oral malodor products and to provide the profession with the most up-to-date research results and clinical methods.

The first day of the conference consisted of presentations from experts in the diagnosis and the etiology of oral malodor. The following is a summary of these presentations. The meeting opened with a talk by Israel Kleinberg (SUNY Stony Brook) on the various causes of oral malodor. Dr. Kleinberg focused on microbial putrefaction and the role of saliva in formation of the various volatile components of oral malodor. He was followed by Walter Loesche University of Michigan) who described sensory testing (odor judges) as the primary reference standard for breath offensiveness, with other 'surrogate' testing methods. Dr. Loesche opined that no single laboratory test can account for all the compounds involved in malodor. He alluded to malodor from systemic vs. oral sources and gave a brief overview of treatment strategies (debridement, antimicrobial etc.)

Dr. John Greenman (UWE, Bristol UK) provided a critical review of the existing literature on product effectiveness. Widely varying protocols and measurement techniques confound attempts to compare studies in different laboratories (for example investigation protocols varied in length from several to 24 hours for single product use, 1-6 for cumulative use and tolerance.

Dr. Greenman stressed the need for standardization of methodology and dissemination of information in the area. Dr. Don Brunette (U of British Columbia) then followed with an overview of trial designs, discussing inclusion criteria, sampling methodologies, parallel vs. crossover designs, sources of bias, and a discussion of whether odor judges are an appropriate gold standard.
Loretta Borden (Hilltop) provided an overview of how a large private testing company measures malodor. She discussed scale definitions for sensory odor judges (intensity and hedonic), annual screening and training of judges, and patient preparation.
Mel Rosenberg (Tel Aviv U) discussed some of the difficulties inherent in measuring bad breath. Although odor judges are still the 'gold standard', measurement is complicated by the fact that there are several common kinds of oral malodor, and individual judges may react differently to each. He recommended that measurement of products should reflect their everyday intended use, and that ADA recommendations should also consider products that claim to prevent the development of odor over time.

Mirdza Neiders (SUNY at Buffalo) discussed levels of efficacy expected for oral malodor products, addressing measurement issues, definition of appropriate outcome variables, short term vs. long term issues, and the problem that reductions in organoleptic readings do not always reflect reductions in volatile sulfide levels.

Howard Proskin (University of Rochester) discussed statistical issues, including validity and reliability of methods of measurement. He opined that organoleptic scoring can, at least in some instances, be treated as a continuous variable. He suggested that products be judged on their ability to reduce bad breath levels to an agreed upon threshold value.

On the second day after speakers had concluded their presentations the participants were asked to join one of the following discussion groups.

1. council statement on oral malodor
2. design of clinical studies
3. measurement methods
4. level of efficacy and statistics

Participants in each discussion group were asked to prepare recommendations for the Council on Scientific Affairs to aid in their development of the ADA guidelines for oral malodor products. Summary of the working groups recommendations were as follows:

1. ADA language must have a definable distinction between cosmetic and therapeutic claims
2. Guidelines may need to be developed for the different mechanisms of action such as mechanical VS antimicrobial. The ADA should also take into consideration the possible development of devices (tongue scrapers, brushes, oral irrigators) for the treatment of oral malodor.
3. There is a need to determine what will be the quantifiable endpoint (acceptable threshold) level of breath odor. This acceptable level must be definable and defendable.
4. Sensory assessment is the current gold standard and should be the primary outcome variable in clinical trials.
5. The sensory odor judges should be trained and calibrated to either the intensity (offensiveness) scale and/ or the hedonic (pleasantness) scale.
6. A minimum of 2 and preferable 3 or more odor judges should be utilized in each study.
7. In addition to subjective assessment an objective assessment method such as microbial testing, volatile sulfur levels, etc., should be included as a secondary outcome measure.
8. Study design will be dependent on length and population selection may vary depending on the product claim.
9. Levels of statistical significance must have meaningful clinical significance
10. Significance levels from baseline measurements and comparison of treatment groups should fall below a definable and defendable threshold line.

Personal Commentary on the ADA Guideline Deliberations: Professor John Greenman, UWE, Bristol, UK

If my understanding is correct (and I accept that it might not be) the ADA may consider recommending that products used in the management of oral malodour will be assessed using human trials based on organoleptic intensity measurements (0-5 scale). Other surrogate or secondary tests (VSC by halimeter or GC, hedonic pleasant/unpleasant, microbial counts, cadaverine/putrescine by HPLC, electronic nose etc.) will also be employed.

For the organoleptic intensity test, the ADA may stipulate that there must be at least a 1-point reduction, and that this reduction must end with the mean score being 2 or less for the test group (slight malodour).

I agree with the first part of the recommendation with the possible exception that 3 hours might be better that 4 (see later note 4 on this). So we both basically agree that test products should produce at least a 1-point reduction on the 0-5 intensity scale compared to placebo control (at 3 or 4 hours).

Where I basically disagree is that there has to be a stipulated endpoint of <2 [mean score for group]. The reasons are discussed below:

Reason 1. The drug/cosmetic dichotomy:

Products (mouthrinse, toothpaste, spray, lozenge, gum, capsule, dissolving film) aimed to reduce or control malodour are generally regarded as cosmetic products (ie. oral hygiene "deodorant") rather than drugs or therapeutic treatments. Yet to stipulate a clinical end-point (that it will rid bad breath; that it will reduce breath odour to a level that is considered non-objectionable) is to my mind a therapeutic or clinical aim and will conflate the cosmetic/drug therapy dichotomy. This "clinical outcome" is more compatible with a drug claim (FDA domain) rather than an oral hygiene/cosmetic claim (ADA domain). A "relative" approach (no stipulated threshold) will remove this notion.

Reason 2. Efficacy can be defined as a 1-point reduction after a given time anywhere on the intensity scale. A 1-point reduction is equally valid anywhere on the exponential breath intensity scale. Stipulating that the reduction must be from 3 (or just above) to 2 (or just below) will cause pressure for trial teams to focus more narrowly on enrolment and selection of volunteers (those with scores of around a 3), in order to reach the standard reduction more easily. Trials become more volunteer "sensitive" in their outcome.

To expand and explain reason 2 more fully:

(a) The odour intensity scale is exponential

According to data from our experiments (and I accept that these experiments should be repeated by others) the 0-5 organoleptic scale is exponential (see Figure 1). In terms of VC concentrations, we found that each level was about 5 times more VC than the previous level. In terms of H_2S this suggests that if 0 is 1ppb; 1 = 5 ppb; 2 = 25 ppb; 3 = 125; 4 = 625 and a 5 = >3,125ppb. Although the $\log_5$ (log to the base 5) relationship is only an approximation (not verified by others) it is generally agreed that it is exponential (so it will not seriously detract from my argument whether it be log to base 4, 5 or 6).

(b) The oral cavity is in an approximate steady state prior to perturbation:

The dilution rate of VC in the gas phase is extremely rapid; therefore, the production rate of VC by oral biofilms is the single most important factor to consider. There is a relatively steady production rate of VC/VSC from tongue and other oral biofilms. Microbes grow and biotransform in a continuous process which approximates to a dynamic steady state (discounting the oscillations in gas flow; ie. breathing). There is a strong relationship (R-squared value = 0.776; $p<0.005$) between the number of strict oral anaerobes on the tongue and the breath malodour level (Hartley, G., McKenzie, C., Greenman, J.,El-Maaytah, M.A., Scully, C. and Porter, 1999. Tongue microbiota and malodour: Effects of metronidazole mouthrinse on tongue microbiota and breath odour. Microbial Ecology in Health and Disease, **11**, 226-233). The oral biofilm generation rate of VC dictates the final breath odour score. A product that inhibits the catalytic rate of (say) VSC production (e.g. Zn) or indeed any agent that kills or inhibits VC generating microbes (e.g. chlorhexidine) will lower the rate of production by a certain fraction or percentage. They will do this regardless of their starting point in

terms of microbe density or enzyme target number (or breath levels). It is the concentration of agent and the binding affinity to the cells and/or enzymes coupled with agent diffusion rate that is important. These features are all saturation dependent (i.e. relate to starting concentrations of agent) rather than dependent on numbers of cell/enzyme targets.

(c) The oral cavity as a perturbed steady state

With a pulse of [high conc.] agent (i.e., treatment), the tongue biofilm starts off with a greater than saturating concentration of agent. It is then diluted. Microbes are killed, then inhibited, then re-grow. Enzymes are inhibited. All these processes can be modeled in terms of exponential rates. The profile of dilution (by salivary flow) is more or less the same in all people ($D = f/V$ where D = dilution rate (h^{-1}), f = salivary flow rate (ml/h) and V = residual salivary volume). Since the profile of product concentration is similar from person to person (for the same product) the response of the targets is similar whatever their starting number. The number of product molecules is *initially* always many times greater than the numbers of microbes, whether they be 10^6, 10^7, 10^8 or 10^9 microbial cells per square cm of tongue surface. Their behaviour is explained in terms of agent binding and inhibitory action (K_i). Note that K_i values are described in terms of concentration of agent that binds and inhibits the rate of reaction by 50%; it is analogous to K_m. For this reason I state that concentration profile rather than starting number of cell/enzyme targets is the important factor. The same is true for the rates of diffusion of the agent into the biofilm. This is also concentration dependent (Fick's law).

Therefore, one might expect a similar rate of inhibition (e.g. 80%) whatever the initial breath levels are. In our model an 80% inhibition would bring a 5 down to a 4. However, an 80% inhibition would equally bring down a 4 to a 3, a 3 to a 2 and a 2 to a 1. This is the nature of the exponential scale (i.e. it is a mathematical truism). In other words, a given % inhibition of VC generation rate will result in an equal incremental reduction on the breath-odour scale wherever it is on that scale. Therefore, a stipulation that there must be a mean 1 unit drop in breath score is sound but it does not have to be from >3 and <2. A relative approach (a drop of 1 anywhere on the scale) is sufficient for measuring efficacy. (Where efficacy is defined in terms of % reduction of odour level compared to placebo).

Note 1. This will not be true for odour neutralising or masking compounds that have no effects on VC generation rates. But then, the organoleptic intensity test should not really be used for compounds that do not affect the intrinsic biotransformations of substrate into VC. For neutralising/masking types of compounds, a ratio of compound to VC gas molecules is an important concept. They work on the titration model (x-molecules of agent neutralise or mask y-molecules of VC's). They have to work much harder at higher breath levels. Their effectiveness is very breath level-dependent. Using our example above it would have to mask or neutralise 5-times more for a person scoring a 2 as compared to a person scoring a 1, but a massive 625 times more for a person with a 5.

For compounds that mask malodour, then this is a fundamentally different process again since the masking agent is mixing with the VC/VSC in the volunteer's oral cavities but is affecting the biological, neurological or psychological processes that occur in the nose/brain of the perceivers (the odour judges). It is here that smell receptors get blocked or the smell signature somehow gets confused. It is not appropriate to use a smell intensity test (unless it is to measure the strength of the fragrance mask alone), since the VC/VSC levels should by definition be no different throughout. Therefore, masking agents are best tested hedonically on the pleasant/unpleasant scale (see later critique of this scale; note 3). The biggest difficulty is where products do both (inhibit and mask). I do not have a simple answer for this.

d. Standardisation of organoleptic judges and impact of the 2-threshold

Different trial centres (ie. different odour judge panels) have widely different interpretations of this scale. Although I did not mention this point in my address to the ADA, my own review of the literature has revealed wide differences in scores for the different centres. Here are some examples from six studies for where baseline data exists for both mean VSC and mean organoleptic scores:

	VSC (ppb)	Organoleptic rating
Example 1	49	1.31
Example 2	52	1.74
Example 3	55	3.45
Example 4	117	4.5
Example 5	221	1.27
Example 6	400	3.40

These are widely different. There is therefore a clear need to standardise the different groups/panels of judges (see later note on this). It is possible that some judge panels focus too much on the middle part of the scale which "expands" as a result. The panel to panel variation may make it easier or harder to achieve a gold standard result at some centres than at others. There may also be a tendency for the US to score different from Europe; no

one knows. ***If the ADA demands an absolute (<2) threshold then the standardisation of odour judges or judge panels becomes even more important.*** It also means that the volunteer intake is going to be scattered as close to 3 as can possibly be. Those with odour scores of 4 and 5 will rarely be selected for trials. Since few volunteers will be enrolled on the trial at the lower end of the range (0, 1, 2) (to ensure that the starting level is high enough), and since there will be few 4's or 5's, there is a great danger that the scale will change (stretch) to meet the new, narrow range of the trial volunteers. The absolutist (threshold <2) approach may push trials into becoming more "intake" dependent for their success. Moreover, the products would never get tested on subjects whose breath odour levels were 4 or 5.

The tendency to stretch or narrow the scale or gap between a 3 and a 2 would be less likely if the distribution of intake scores remained wide. Having some 1's and 5's in the same group would help the odour judges use the widest span of the scoring scale. A relative approach (a 1-point drop anywhere on the scale) would help ensure that the intake population maintained a wide distribution of odour levels. It wouldn't matter where the mean was as long as it was somewhere above (say) 2. The outcome would then be less dependent on the nature and selection of trial volunteers.

Note 2. ***Methods to standardise odour judges:***

One method would be to send gold standard calibrating judges to visit each panel of judges and check that the scale is similar. This is unlikely to be practical or welcome. The alternative method would be to use standard solutions of odourants. I accept that no one standard odour solution can reflect the complex bouquet of human breath; but for standardization purposes this would not be required. As long as a range of standard odorants is used, sufficient to reflect the different patterns of nose receptors, then you can standardise your judges. At UWE, when we are training breath judges, we use the following solutions; dimethyldisulphide, indole, cadaverine, butyric acid, trimethylamine, and ethanol. They represent the main groups of malodour compounds commonly encountered. Different set concentrations of each pure compound in water can be used to give the range of 0 to 5 for each odour. Such odourants are reproducible from time to time and lab to lab if made up to protocol and handled in the right way.

Other general but related points

Note 3. Critique of hedonic scale (pleasant/unpleasant)

Consider a compound that has neutral (neither pleasant nor unpleasant) odour on the -9 to -0- to +9 scale. It scores zero whatever its intensity, and hardly moves from the zero over a wide range of concentrations (intensities). Consider methyl mercaptan. As the concentration of this increases from zero, even the most pleasant breath (+9) will shift across the scale to -9. What sort of a scale is it when some compounds stay put and some swing right across the scale?

Clearly there is an odour intensity dimension to the hedonic odour judgements, but it also depends on the physiological, subjective and psychological response of the perceiver. Moreover, the main biological reactions are going on in the nose/brain of the perceiver rather than in the oral cavity of the volunteer. Each perceiver may react in a different way to different smell signatures. Although some human reactions to unpleasant smells may be universal (common to all humans in all societies), others depend on psychological conditioning of what is pleasant/unpleasant. Some people like the smell of indole whilst others hate it! Moreover, humans have different distribution patterns of smell receptors in their nose. Some noses are more sensitive to some compounds than others. Some people can't smell indole at all (so it is neither pleasant nor unpleasant). The hedonic test has a much greater element of subjectivity than the intensity scale. The intensity scale does at least relate to increases in concentrations of VC's in a quantitative way; verification of this relationship is always possible. What does the hedonic scale relate to? How can it be verified?

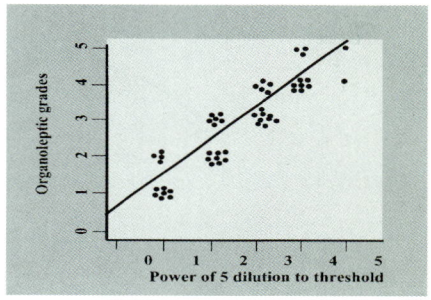
Note 4. Critique of 4 hours as main measurement time

Reason 1. From my experience of doing a number of studies using volunteers in trials, four hours is not as good as three hours from the perspective of the natural day cycle (meals and hunger). Both lack of food and food intake can effect breath odour. Most trials start in the morning (e.g. 9.00 am), volunteer appointment times for measures and treatment are staggered and the last person in the group may not complete until after 10.00 am. Quite often the protocol calls for trial volunteers to avoid breakfast that morning; some suggest having a light breakfast. When it gets towards lunchtime, most trialists get hungry. A three-hour measurement can come before lunch and not upset the volunteers natural cycle too much. A four-hour measurement has the problem that unless a meal is allowed between three and four hours, the volunteers are really hungry and this affects breath levels. Some volunteers surreptitiously eat during this period.

Alternatively you let all your volunteers eat a meal but this introduces too many variables and is difficult to control in the trial population. In a crossover study there is a greater chance of week to week variation in eating patterns and diet. Having a 3-h period as the main measurement point obviates the whole problem (fussy arrangements or hungry volunteers) and is less susceptible to the introduction of new variables and wider variation.

Reason 2. I simply think that a 1-point reduction will be quite difficult to reach at 3 hours and almost impossible to reach at 4 hours. (i.e., 4-hours is too hard or ambitious). In preparing for my review at the ADA I was struck by the fact that even the best products were only reducing VSC by 40 to 50% by 3 hours. According to my calculations, even a 50% reduction in VSC levels would be insufficient to cause a 1-point drop in organoleptic score.

Figure 1. The exponential nature of the breath odour intensity scale



Proceedings of the Fifth International Conference on Breath Odour, Tokyo, Japan, 2001. Published in the International Dental Journal, volume 52 (Supplement)

T. Murata, T. Yamaga, T. Lida, H. Miyazaki and K. Yaegaki. Classification and examination of halitosis. Int Dent J 2002;52:181-186.

J.M. Coil, K. Yaegaki, T. Matsuo and H. Miyazaki. Treatment needs (TN) and practical remedies for halitosis. Int Dent J 2002;52:187-191.

K. Yaegaki, J.M. Coil, T. Kamemizu and H. Miyazaki. Tongue brushing and mouth rinsing as basic treatment measures for halitosis. Int Dent J 2002;52:192-196.

H. Saito, Y. Kawaguchi. Halitosis Prevention Campaign: A report of oral health promotion activities in Japan. Int Dent J 2002;52:197-200.

A. Tangerman. Halitosis in medicine: A review. Int Dent J 2002;52:201-206.

K. Hoshi, Y. Yamano, A. Mitsunaga, S. Shimizu, J. Kagawa and H. Ogiuchi. Gastrointestinal conditions and halitosis: association of *Helicobacter pylori* infection. Int Dent J 2002;52:207-211.

S. Awano, K. Gohara, E. Kurihara, T. Ansai and T. Takehara. The relationship between presence of periodontopathogenic bacteria in saliva and halitosis. Int Dent J 2002;52:212-216.

Y. Nakano, M. Toshimura and T. Koga. Methyl mercaptan production by *Porphyromonas gingivalis*. Int Dent J 2002;52:217-220.

I. Kleinberg, D.M. Codipilly. Cysteine challenge testing: a powerful tool for examining oral malodour processes and treatments in vivo. Int Dent J 2002;52:221-228.

Sterer N, Rosenberg M. Effect of deglycosylation of salivary glycoproteins on oral malodour production. Int Dent J 2002;52:229-232.

G. Rolla, G. Jonski and A. Young. The significance of the source of zinc and its anti-VSC effect. Int Dent J 2002;52:233-235.

I. Kleinberg, M. Wolff and D.M. Codipilly. Role of saliva in oral dryness, oral feel and oral malodour. Int Dent J 2002;52:236-240.

T. Setoguchi, M. Machigashira, M. Yamamoto, Y. Yotsumoto, M. Yoshimori, Y. Izumi and K. Yaegaki. The effects of methyl mercaptan on epithelial cell growth and proliferation. Int Dent J 2002;52:241-246.

K. Yaegaki. Report: Editorial Board of the Proceedings of the Fifth International Conference on Breath Odour. Int Dent J 2002;52:247.

Other Publications Related to Oral Malodor 2000-2002

Suarez FL, Furne JK, Springfield J, Levitt MD. Morning breath odor: influence of treatments on sulfur gases.J Dent Res. 2000;79(10):1773-7.

Yaegaki K, Coil JM. Examination, classification, and treatment of halitosis; clinical perspectives. J Can Dent Assoc 2000;66:257-61

Olshan AM, Kohut BE, Vincent JW, Borden LC, Delgado N, Qaqish J, Sharma NC, McGuire JA. Clinical effectiveness of essential oil-containing dentifrices in controlling oral malodor. Am J Dent. 2000 Sep;13(Spec No):18C-22C.

Hartley MG, McKenzie C, Greenman J, El-Maaytah MA, Scully,C, Porter SR.
Tongue microbiota and malodour; Effects of metronidazole mouthrinse on tongue microbiota and breath odour levels. Microbial Ecology in Health and Disease 11; 226-233, 2000.

Khaira N, Palmer RM, Wilson RF, Scott DA, Wade WG. Production of volatile sulphur compounds in diseased periodontal pockets is significantly increased in smokers. Oral Dis. 2000;6(6):371-5.

Millard HD, Mason DK (eds). Perspectives on 1998 World Workshop on Oral Medicine. University of Michigan, Michigan. 2000.

Yoshimura M, Nakano Y, Yamashita Y, Oho T, Saito T, Koga T. Formation of methyl mercaptan from L-methionine by *Porphyomonas gingivalis*. Infect Immun 2000;68:6912-6916, 2000.

Eli, I, Koriat R and Rosenberg M. Self-perception of breath odor: role of body image and psychopathologic traits. **Perceptual and Motor Skills** 91:1193-1201, 2000.

Dunn, CDR, Black M, Cowell DC, Penault C, Ratcliffe NM, Spence R and Teare C. Ammonia vapour in the mouth asa diagnostic marker for *Helicobacter pylori* infection: preliminary 'proof of principle' pharmacological investigations. British J Biomed Sci 58:66-75, 2001.

I. Eli, R. Baht, H. Koriat, M. Rosenberg
Self-Perception of Breath Odor
Journal of the American Dental Association 132:621-626, 2001.

Morita M, Wang HL. Association between oral malodor and adult periodontitis: a review.J Clin Periodontol. 2001;28(9):813-9.

Oho T, Yoshida Y, Shimazaki Y, Yamashita Y, Koga T. Psychological condition of patients complaining of halitosis.J Dent. 2001;29(1):31-3.

Silwood CJ, Grootveld MC, Lynch E.A multifactorial investigation of the ability of oral health care products (OHCPs) to alleviate oral malodour.J Clin Periodontol. 2001;28(7):634-41.

van Steenberghe D, Avontroodt P, Peeters W, Pauwels M, Coucke W, Lijnen A, Quirynen M. Effect of different mouthrinses on morning breath.J Periodontol. 2001;72(9):1183-91.

Wu CD, Darout IA, Skaug N. Chewing sticks: timeless natural toothbrushes for oral cleansing. J Periodont Res 36:275-284, 2001

Langendijk-Genevaux PS, Hanssen JTJ and van der Hoeven JS. Decrease of sulphate-reducing bacteria after initial periodontal treatment. J dent Res 80:1637-1642, 2001

Seeman R, Kison A, Dizhang M, Zimmer S. Effectiveness of mechanical tongue cleaning on oral levels of volatile sulfur compounds. JADA 132:1263-1267

Furne J, Majerus G, Lenton P, Springield J, Levitt DG and Levitt MD. Comparison of volatile sulfur compound concentrations measured with a sulfide detector vs. gas chromatography. J Dent Res 81:140143, 2002.

Rosenberg M. The science of bad breath. Sci. Am. 286:58-65, 2002.

Lomans BP, van der Drift, C, Pol A and Op den Camp, HJM
Microbial cycling of volatile organic sulfur compounds
Cell. Mol. Life Sci. 59:575-588, 2002

Quirynen M, Zhao H, van Steenberghe D
Review of the treatment strategies for oral malodour
Clin Oral Invest 6:1-10, 2002

Sterer N, R Bar-Ness Greenstein, M. Rosenberg
ß-galactosidase activity in saliva is associated with oral malodor
J Dent Res 81:182-185, 2002

Rosenberg M, G. Robinson, E. Amir
Beating bad breath
Pediatric Medicine 19:139-154, 2002.

Rosing CK, Jonski G and Rolla G
Comparative analysis of some mouthrinses on the production of volatile sulfur-containing compounds
Acta Odontol Scand 60:10-12, 2002

Sharma NC, Galustians HJ, Qaqish J, Galustians A, Petrone ME, Rustogi KN, Zhang YP, DeVizio W, Volpe AR. The clinical efficacy of Colgate Total Plus Whitening Toothpaste containing a special grade of silica and Colgate Total Toothpaste for controlling breath odor twelve hours after toothbrushing: a single-use clinical study. J Clin Dent. 2002;13(2):73-6.

The 80th General Session of the IADR, San Diego, California

Dear Colleagues,
Hello from Minnesota. The 80th General Session of the IADR was held in sunny and warm San Diego, California, USA on March 6-9, 2002. Fifteen of the record number 4155 abstracts were related specifically to oral malodor. The following is a summary of these presentations.

Best wishes,
Georgia Majerus

0251 Effect of chewing gums on volatile sulphur compounds (VSC) production in vivo C. K. ROSING, S.C. GOMES, D.G. BASSANI, and R.V. OPPERMANN, ULBRA, Brazil
The purpose of this study was to evaluate the effect of three commercially available chewing gums on the production of VSCs in vivo. Fourteen subjects participated in the double-blind cross-over study. Test gum 1 (TG1) contained sucrose, test gum 2 (TG2) contained sorbitol and test gum 3 (TG3) contained xylitol and zinc citrate. Following an overnight abstention of oral hygiene, VSCs were measured before and at 5, 15, 30, 45 and 60 min. of gum chewing. VSC production was also monitored prior and up to 30 min. after rinsing with 0.6M cysteine alone and with chewing TG1 and TG3. **Results:** TG2 presented significantly higher values up to 60 minutes, ranging from 840 ppb at 5 minutes, to 540 ppb at 60 minutes. TG1 and TG3 had similar VSC production (146 ppb at 5 min. and186 at 60 min.). Similar reductions in VSCs concentrations were observed following cysteine rinse for both TG1 and TG2, with the largest reductions (71% to 52%) at 5 and 15 min. **Conclusion:** The use of the test chewing gums temporarily reduces VSC concentrations enhanced by cysteine rinses.

0649 A predictive model for the treatments of oral malodor S. LIU, M. WILLIAMS, H. NILES, and R. SUBRAMANYAM, Colgate-Palmolive Company, USA
This presentation reports the development of an in vitro method for the rapid screening of treatments and agents for the control of oral malodor. This method incorporates the essential elements of uptake, retention and subsequent release of actives from hydroxyapatite disks. Disks were coated with saliva then treated with test products. The treated disks were placed in a headspace vial and incubated overnight at 37°C in a shaking water bath. The resulting headspace was analyzed for VSCs using GC. Efficacy of treatments is measured by comparing VSC formation after treatment with a test product to a water control. **Results:** The in vitro method has been validated using technologies clinically proven to control oral malodor. For example, a mouthrinse containing 0.4% zinc acetate reduced VSCs 48% compared to 4% by a matching placebo. Agreement has also been shown when compared to a clinical method using GC analysis. A zinc acetate mouthrinse reduced VSCs 45% VS 3% by a matching placebo. The in vitro method was also used to demonstrate that three dentifrice variants containing 0.3% triclosan and 2% Gantrez copolymer are similar in controlling VSCs and were different from placebo. These results were subsequently corroborated by clinical studies. **Conclusion:** The in vitro breath odor VSC model is a predictive tool for assessing new and existing product technologies for the control of oral malodor.

0749 Comparative Molecular Analysis of Tongue Bacteria in Halitosis and in Health A.M. LEE, P.M[1]. MITCHELL[1], L.N. STOKES[1], C.E. KAZOR[2], W.J. LOESCHE[2], F.E. DEWHIRST[1], and B.J. PASTER[1], [1] The Forsyth Institute, USA, [2] University of Michigan, USA
The purpose of this study was to compare bacteria (including not-yet-cultivated species) on the tongue of healthy and subjects with oral malodor. 5 healthy subjects with organoleptic scores ≤2 and Halimeter scores ≤150ppb and 6 halitosis subjects with organoleptic scores of ≥3 and Halimeter scores ≥200ppb. 16S rRNA genes were cloned into E. coli by PCR amplification of DNA isolated from tongue scrapings. The sequences of 16S rRNA cloned inserts were compared with sequences of known species or phylotypes to determine species identity or closest relatives. **Results:** Analysis of over 750 clones (50-100 clones/sample), 89 bacterial species were identified. Half were uncultivated phylotypes, of which 25 were novel to the microflora of the tongue. Species associated with health were *Streptococcus salivarius, Stomatococcus mucilaginosus*, and an uncharacterized species of *Eubacterium*. Species associated with halitosis were *Atopobium parvulum*, an uncharacterized species of *Dialister, Eubacterium* sulci, a phylotype of the uncultivated phylum TM7, *Solobacterium moorei*, a phylotype of *Streptococcus*, and *Veillonella* atypica. **Conclusions:** *S. salivarius* is the predominant species found in healthy subjects. *S. salivarius* was distinctly absent from subjects with halitosis.

0844 Analysis of patients' consumption profile of oral rinse solutions C.H. MOREIA, G.F. DALLA VECCHIA, C.K. RÖSING, R.V. OPPERMANN, and G.A. CHIAPINOTTO, ULBRA, Brazil
The aim of this study was to describe patients' reported consumption of mouthrinses and the factors that influence their choice. 150 patients were interviewed for their use of mouthrinses and reasons for use. Patients were also offered 5 commercially available mouthrinses (SOL1- chlorhexidine, SOL2 – cetylpiridinium chloride, SOL3 – essential oils, SOL4 – herbal components and fluoride and SOL5 –

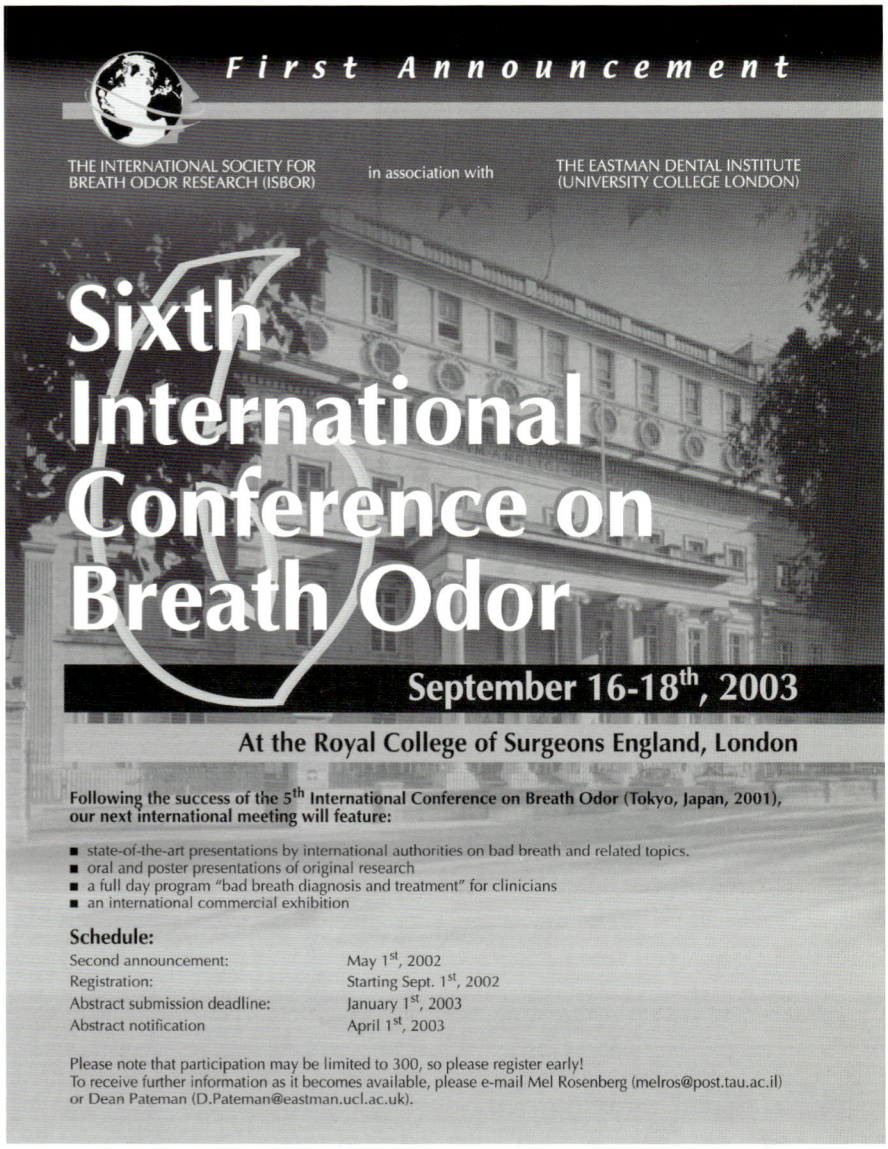
herbal components and tirotricin). After choosing a mouthrinse the reasons for their choice were inquired. **Results:** 54.7% of the patients never use a mouthrinse and 5.3% use it regularly. The reported reason for mouthrinse use were to treat halitosis and prevent oral diseases (44.7%), treat gingival inflammation (39.3%) and to better clean the teeth (38.7%). The main reason for choosing a mouthrinse was dentist's prescription (68%), price (29.3%) and medical properties (16%). When asked to choose a mouthrinse the most frequently chosen was SOL2 (41.3%), followed by SOL3 (22.7%), SOL5 (15.3%), SOL (10.7%) and SOL4 (10%). The most reported reasons for choice were most known, brand and advertisement (42,6%). **Conclusion:** The advertising aspects have more impact on the patients' choice for a mouthrinse than their medical properties or recommendation by dental professional.

0982 Development of highly selective and sensitive halitosis-diagnosing H_2S sensor P. LODHIA[1], A. KHAKBAZNEJAD[1], J.H. SUNG[2], Y.-S. CHOE[2], and K. YAEGAKI[1], [1] University of British Columbia, Canada, [2] Tong Yang Moolsan Co., Ltd, South Korea
The objectives of this study were to examine the selectivity of the new ceramic semiconductor sensor (Tong Yang Moolsan) and the voltammetric sensor (Halimeter™) for oral compounds and determine the correlation with different H_2S concentrations. Both sensors were tested for selectivity of ethanol (220ng/dl air), methanol (100ng/dl air), acetone (200ng/dl air) and flavoring by Crest™ toothpaste (100mg and 25g/3L air). Measurements with the semiconductor sensor were taken at three different H_2S concentrations (1.7ng, 3.9ng, and 8.1ng/10ml air). **Results:** Ethanol, methanol, and acetone were not detected by the ceramic semiconductor sensor, while the Halimeter™ sensor showed 112±29ppb, 43±5ppb, and 126±12ppb respectively. Toothpaste flavor (100mg and 25g/3L air) was detected by Halimeter™ sensor (150ppb and 800ppb). In comparison, the ceramic semiconductor sensor detected only 37.2±2.0 ppb and 55.0±2.4 ppb. A strong positive correlation (r=0.978, P<0.0001, n=30) existed between H_2S concentrations and ppb levels detected by the ceramic semiconductor sensor. **Conclusions:** Ethanol, methanol, acetone and toothpaste flavoring interferes with the H_2S detection by the Halimeter™, but the ceramic semiconductor sensor is highly selective towards H_2S. Moreover, this novel semiconductor sensor has a strong correlation with H_2S concentrations.

1008 Novel anaerobes isolated from the dorsum of the tongue using conventional culture techniques S. NACHNANI[1], D.M. CITRON[2], Y. WARREN[2], and K.L. TYRELL[2], [1] University Health Resources Group, USA, [2] Santa Monica UCLA Hospital, Medical Centre, USA
The purpose of this study was to use a large number of selective media and non-selective media and identify maximum number of microorganisms using cultural techniques. The tongue plaque coating samples were collected with the BreathRxTM tongue scraper. Dilutions of the sample were immediately prepared in saline and quantitative cultures were performed using a variety of selective and non-selective agar. Plates were incubated immediately at 37° C in jars with an anaerobic atmosphere. After 5-7 days, plates were examined and the different morphotypes were counted and further identified using preformed enzymes and PRAS biochemicals. **Results:** Predominant organisms were anaerobes present in counts of 10^{7-9} CFU/ml. Most frequently isolated species were *P.anaerobius, P.micros, E. corrodens, A. isrealii, F. nucleatum, Veillonella, Selemonas flueggi* Pigmented **Prevotella B. ureolyticus, and P. mirabilis**. The following list of bacteria has been identified for the first time from the dorsum of the tongue Prev.tannerae, *C. concisis, L. buccalis, E. saburreum , E. timidum, A. turicencis, Selenomona flueggei, C. mucosalis, Collnsilla aerolaciens, Pseudoramibacter allatolyticus, Bifido brevei, Prevotella nigrescens, Seleno infelix, Porphyromonas catoniae* and *Centipeda periodontii.* **Conclusions:** The use of extensive selective and non -selective media allowed us to identify the novel bacteria not reported earlier in the literature.

1079 Simultaneous oral malodor stimulation and E_h reduction activities of saliva I. KLEINBERG and M. CODIPILLY, State University of New York at Stony Brook, USA
The purpose of this study was to identify the constituents of salivary supernatant responsible for its simultaneous stimulation of odor formation and Eh lowering. Wax stimulated whole saliva was centrifuged at 30,000g for 20 min and the supernatant was filtered through Amicon Diaflo filters XM50, YM1 and YCO5 to produce Fractions A (>50,000 mw), B (>1000 mw), C (>500 mw) and D (<500 mw). Each fraction and a supernatant control was tested for malodor and Eh decrease. Odor was assessed organoleptically (0 – 4) and VSCs with the Halimeter. Eh reduction was measured with a platinum electrode. **Results:** Fraction D consistently showed most odor stimulation and Eh lowering. Its organoleptic index value was 0.71±0.58 compared to 0.14±0.29 (A), 0 (B) and 0 (C). VSC for D was 97.7±29.5 ppb compared to 88.3±26.9, 86.2±28.1 and 94.4±27.2 for A, B and C, respectively. Eh lowering for D was 185.7±101.4 mV compared to 234.3±101.4, 225.7±98.5 and 220.0±95.6 for A, B and C, respectively. Subfractionation of D and testing of the subfractions indicated the dual active component was peptide and subsequently identified as cysteine peptide. Further testing showed cysteine to be the active agent. **Conclusions:** Cysteine derived from small cysteine peptides appears to be the primary constituents responsible for the dual effect of saliva supernatant on malodor stimulation and Eh lowering.

1484 The Effect of Chlorine Dioxide (ClO_2) on Oral Malodor J. ONO, P. LINGSTRÖM, and D. BIRKHED, Göteborg University, Sweden
The aim of the present investigation was to evaluate the effect of a new stabilized form of chlorine dioxide (ClO_2). Nineteen subjects (13 smokers and 6 non-smokers) participated in a 14-day randomized trial. Subjects rinsed 4 times daily with 2x10 ml of 40 ppm ClO_2 (XINIX®, XINIX AB, Stockholm, Sweden), or 0.02% zinc chloride (ZC) or distilled water (DW). VSC levels were measured at baseline, day 7 14 with the Halimeter®. Measurements were taken before and after mouthrinsing. Patient satisfaction was evaluted day 7 and 14 by use of a visual analogue scale (VAS). **Results:** Only ClO_2 resulted in a long-term reduction of VSC from day 0 to day 14 for all subjects. The strongest short-term reduction of VSC was found for ZC (42-44%), followed by ClO_2 (24-29%) and DW (9-14%); ZC and ClO_2 differed significantly from DW ($p<0.01$) and ZC from ClO_2 ($p<0.05$). The mean VAS was 36% for ClO_2, 21% for ZC and 22% for DW (NS). **Conclusions:** The new stabilized form of chlorine dioxide INXIX reduces the level of oral malodor and has a greater long-term effect than the zinc chloride.


First Announcement
THE INTERNATIONAL SOCIETY FOR BREATH ODOR RESEARCH (ISBOR)
in association with
THE EASTMAN DENTAL INSTITUTE (UNIVERSITY COLLEGE LONDON)
Sixth International Conference on Breath Odor
September 16-18th, 2003
At the Royal College of Surgeons England, London
Following the success of the 5th International Conference on Breath Odor (Tokyo, Japan, 2001), our next international meeting will feature:
state-of-the-art presentations by international authorities on bad breath and related topics.
oral and poster presentations of original research
a full day program "bad breath diagnosis and treatment" for clinicians
an international commercial exhibition
Schedule:
Second announcement: May 1st, 2002
Registration: Starting Sept. 1st, 2002
Abstract submission deadline: January 1st, 2003
Abstract notification April 1st, 2003
Please note that participation may be limited to 300, so please register early!
To receive further information as it becomes available, please e-mail Mel Rosenberg (melros@post.tau.ac.il) or Dean Pateman (D.Pateman@eastman.ucl.ac.uk).

1568 Two kinds of periodontal therapy: long-term results on the reduction of oral malodor S.L. SALVADOR, D.C. GRISI, L.C. FIGUEIREDO, and M.F. GRISI, University of Sao Paulo at Ribeirao Preto, Brazil
The purpose of this study was to evaluate 2 periodontal treatments in the reduction of malodor, scaling and root planing (SRP) alone and scaling and root planing with chlorhexidine chip. Twenty patients with periodontitis and probing depths >5.0mm on 4 teeth were randomly divided into SRP alone (GI) or SRP and subgingival placement of 2.5mg chlorhexidine chip (GII). Clinical parameters (Plaque Index-PlI, Probing Depth-PD, Bleeding on Probing-BOP) were recorded at baseline, 3, 6, 9 and 18 mo. after treatment. Samples for BANA Test were taken from the tongue dorsum periodontal pockets and analyzed. VSC levels were recorded using the Halimeter. **Results:** Both groups presented significant improvements in all clinical parameters after 18 months. Statistically significant differences between GI and GII for BOP (34.6% and 51.6%, respectively) and positive subgingival samples for BANA Test (57.7% and 80.6%, respectively) were also shown at 18 mo. VSCs levels for GI were reduced from 295.4ppb at baseline to130.1ppb at 18mo. In GII the difference was observed at 6 mo. from 320.8ppb (baseline) to 148.8ppb (6 months), and the VSC levels recorded higher than GI at 6, 9 and 18 months (210.5ppb). **Conclusions:** The two evaluated periodontal treatments were efficient to show improvements in the clinical and microbiological parameters, and the use of chlorhexidine chip didn't offer additional benefit to reduce oral malodor.

1772 A comparison of the inhibiting potential against oral malodor of zinc ions and two antibacterial agents A.R. YOUNG, G. JONSKI, and G. RÖLLA, University of Oslo, Norway
The purpose of this study is to compare the anti-oral malodor effect of cetylpyridinium (CP) and chlorhexidine (CHX) in terms of duration, and dose/effect relationships. **Method:** Oral malodor

was induced in subjects by rinsing with cysteine. The oral VSC response to cysteine, with and without pre-rinses with differing inhibiting agents, was examined. Test agents were: Zinc acetate (ZnAc)(0.1, 0.3 and 1.0%), CHX-diacetate and CP-chloride (0.025 and 0.2%). Mouth air was analyzed by gas chromatography at 1, 2 and 3h **Results:** ZnAc reduced VSC 97-90% after 1h, and 91-37% after 3h dependent upon concentration. 0.2% CP reduced VSC 45% at 1h, and 30% at 3h. 0.025% CP reduced VSC 47% at 1h and only 15% at 3h. 0.2% CHX reduced VSC 77% at 1h, 95% at 2h and 96% at 3h. 0.025% CHX reduced VSC 46% after 1h, 40% at 2h and 40% at 3h. **Conclusions:** Zinc ions had a marked short-term effect that deteriorated rapidly with the lower concentrations. CP showed little enhancement of anti-VSC effect with increasing concentration, and the effect deteriorated rapidly regardless of concentration. The higher concentrations of CHX showed an increased effect with time whereas the low concentration maintained its effect with time.

1773 Anti-volatile sulfur compounds (VSC) effect of zinc-chelates with high stability constants G. ROLLA, G. JONSKI, and A.R. YOUNG, University of Oslo, Norway

The purpose of this study was to examine the anti-VSC effects of Zn-chelates. 4 Zn-chelates (Albion Laboratory, Utah, USA) were tested. Two were amino acid-chelates containing 10 and 20% Zn respectively, the third and fourth were arginine- and histidine-chelated, both with 10% Zn. The chelate containing 20% Zn was water soluble, whereas the others had low water solubility. Part A: Zn acetate (ZnAc) and different Zn chelates in dry state (=1mg Zn) were added to test tubes containing one ml of human mixed saliva. After 24 h incubation the amount of headspace VSC was measured in a GC. Part B: 1mg samples of ZnAc or Zn-chelates were added to test tubes containing one ml distilled water saturated with H2S. After 5 min incubation the amount of VSC was measured in the GC. Part C: The clinical anti-VSC effect of a solution containing the soluble Zn-chelate was examined in volunteers and compared with a solution of ZnAc containing the same amount of Zn. Oral VSC formation was enhanced with cysteine. **Results:** A) the Zn-chelates inhibited VSC in saliva samples, B) the Zn-chelates inhibited release of Zn from water saturated with H2S, C) the soluble Zn-chelate inhibited oral H2S formation in vivo. All effects were similar to that of ZnAc, which has a very low stability constant. **Conclusion:** It is suggested that the Zn chelates provide Zn for oral ligands with much higher stability constants.

2040 Evaluation of a Portable Breath Monitor for the Self-diagnosis of Halitosis C.P. WILSON, A.J. MORETTI, C.M. FLAITZ, and J.-W. CHEN, University of Texas Health Science Center, USA

The purpose of this study was to determine the accuracy of measuring breath odor with the BreathAlert™ by comparing it to two established methods (Halimeter® and Organoleptic). 30 subjects completed and oral hygiene questionnaire. Breath quality (oral) was evaluated by a organoleptic odor judge (breath exhaled and breath during counting), Halimeter® (oral and nasal air), BreathAlert™ (oral and nasal). Organoleptic results were ranked from 0-5, while the 2 devices were used according to the manufacturer's instruction. A second evaluator performed a clinical examination to assess tonsil size, plaque, tongue coating and anomalies, caries, restorations and gingival inflammation. **Results:** The organoleptic methods (breath smell and breath count) correlated significantly with each other (R=0.71) as did the Halimeter® with breath smell (R=0.50) and with breath count (R=0.71). Although there was internal consistency with the BreathAlert™ for oral and nasal (R=0.81), the readings did not correlate significantly with the organoleptic or Halimeter® results. No correlations were noted for the BreathAlert™ and the items on the questionnaire or the clinical findings. In conclusion, the BreathAlert™ does not correlate with other established methods for determining breath odor.

2314 Effect of food products in reducing oral malodor A. KHAKBAZNEJAD, P. LODHIA, and K. YAEGAKI, University of British Columbia, Canada

The objective of this study was to compare the effect of foods, such as green tea products, mint, a parsley oil product and chewing gum on oral malodour as assessed by gas chromatographic (GC) determination of H_2S and CH_3SH. All products were examined on the same 15 subjects on different days. The effect of the food products on in vitro VSC production was determined using a salivary putrefaction system. Deodorant activity of the food products was evaluated by the reduction of the H_2S in the headspace during incubation. **Results:** All the products did not demonstrate statistically significant effects on the VSC levels in the mouth air immediately after use or at 1, 2, and 3 hours after ingestion. However, a green tea product dramatically reduced methyl mercaptan concentration immediately after use by 59% (ANOVA, $P < 0.05$), whereas some products actually increased VSC concentration. Green tea, mint, and toothpaste significantly suppressed VSC production in 24-hour saliva putrefaction test (ANOVA, $P < 0.05$). Furthermore, the deodorant activity of the green tea product was significantly higher than other food products (ANOVA, Tukey test, $P < 0.05$). **Conclusion:** The green tea product is a promising approach to gentle treatment in controlling oral malodour.

3283 *Streptococcus salivarius* facilitates mucin putrefaction by *Porphyromonas gingivalis* N.STERER and M.ROSENBERG, Tel Aviv University, Israel

Oral malodor is generally considered to result from the breakdown of oral mucins and other proteins by Gram

negative bacteria. However, Gram positive bacteria may also play an important role by deglycosylating oral glycoproteins, thus facilitating their subsequent proteolysis. Objects: in the present study, we tested the ability of *Streptococcus salivarius* to facilitate mucin degradation and malodor production by Porphyromonas gingivalis. Methods: mucin (pig gastric mucin 1%, Sigma) was preincubated aerobically in the presence (or absence) of *S. salivarius* NS1, with or without glucose (0.5%) as an inhibitor of deglycosylation for 72 hours. The samples were then inoculated with *P. gingivalis* PK 1924 and incubated for an additional 48 hours under anaerobic conditions. Degradation of mucin was followed densitometric analysis following electrophoresis on 1% agarose gel. Headspace was monitored by odor judge scores and volatile sulfide levels (sulfide monitor 1170, Interscan Corp.). **Results:** results showed that preincubation with S. salivarius increased subsequent P. gingivalis-mediated mucin degradation from 64 to 92% concomitant with similar increases in odor and volatile sulfides. Glucose reduced mucin degradation to 23% and odor and VSC were correspondingly low. Conclusions: the data suggest that saccharolytic and proteolytic oral bacteria may act synergistically to putrefy glycoproteins.

3626 The effects of a Triclosan/copolymer dentifrice on oral odorigenic bacteria P. SREENIVASAN, Colgate-Palmolive Company, USA

This clinical investigation examined the effects of short-term and extended use of the triclosan/copolymer dentifrice (test dentifrice) and a commercial fluoride dentifrice on oral bacteria including odorigenic bacteria. 20 subjects completed a double-blind, crossover study. Subjects provided saliva samples for culturing on enriched and indicator media to enumerate total and odorigenic bacteria respectively. Subjects were randomly assigned a dentifrice for 7-day use and samples were collected on the 8th. **Results:** Extended use of the test dentifrice had a 49% and 66% reduction of total and odorigenic bacteria respectively as compared to the control fluoride paste. Short-term effects were sampled at 2 and 4 hr post-brushing. The reductions of total bacteria at 2 hr and 4 hr for test dentifrice were 62% and 52% respectively versus the control paste. Decrease of odorigenic bacteria following test dentifrice at 2 and 4 hrs were 79% and 72% respectively versus the control. Reductions by the test dentifrice for total and odorigenic bacteria were statistically greater than the control paste. **Conclusions:** These results show that test dentifrice with triclosan/copolymer (Colgate Total) significantly reduced total and odorigenic bacteria and explain the malodor efficacy of this dentifrice.

As we go to press, we have just been informed that Quest International Flavours and Fragrances has come on board as the first PLATINUM SPONSOR of our London meeting next September. Our thanks to Mike Munroe and his colleagues at Quest!!!!

The opinions and views expresed in the material published in Breath Odor News and in presentations at meetings sponsored by ISBOR are those of the authors and contributors and are not necessarily those of ISBOR itself. The authors and contributors are solely responsible for the content of their material, and ISBOR accepts no liability for the consequences of any inaccurate or misleading statement or opinion.

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Vol. 1, No. 2 May 1997

Breath Odor Research

Official Newsletter of the International Society for Breath Odor Research (ISBOR)

Dear colleagues,

The responses to the >1,000 copies of our first newsletter mailed throughout the world were encouraging, and many applications to join the Society have come in. To those members who have already paid dues and await confirmation, I must apologize for taking so long to issue receipts and cash the cheques, but we have been unable to do so for technical reasons. We are currently in the process of finalizing the paperwork which will give our Society official status as a not-for-profit organization and will enable us to initiate financial transactions.

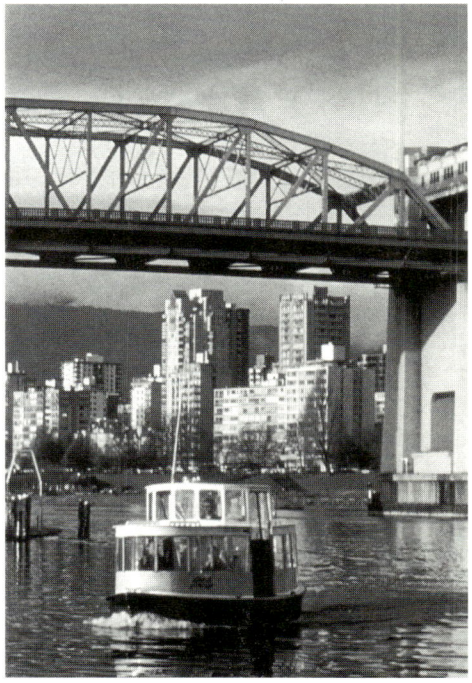
Our first business meeting will take place at the Third International Conference on Breath Odor which will take place August 22-23 this year in Vancouver (see article on page 1). At this meeting we will ratify our by-laws and elect our board, so your attendance is important.

Colleagues, this is your newsletter. In order for it to succeed we need your letters, comments and insight on all matters pertaining to breath odors.

We gratefully acknowledge the support of Procter & Gamble who have joined us as industrial members of our Society.

Mel Rosenberg, editor

Third International Conference on Breath Odor



UBC has been chosen as the venue for the Third International Conference on Breath Odor that will take place August 22-23 this year. Vancouver was chosen because there is a long tradition of continued excellence in this research topic spearheaded by Dr. Joe Tonzetich since his arrival at UBC in 1968. The Conference will be multidisciplinary and feature presentations from some of the world's leading experts on oral malodour and associated conditions including Drs. Rosenberg (Tel Aviv), van Steenberghe (Leuven), Cain (San Diego), Preti (Monel Institute), Loesche (Michigan), Newman (UCLA), Nieder (SUNY) Kleinberg (Stony Brook), Stein (San Diego) and Yaegaki (UBC). Topics to be addressed at the conference range from the operation of oral malodour clinics and the effectiveness of formulations directed against oral malodour to the molecular aspects of olfaction. The cost of the conference has been kept low because of the generous contributions of industrial sponsors. Registration at the conference is (US)$225 for members of the International Society for Breath Odor Research or (US)$275 for non-members. Registration includes coffee breaks and lunches for the two days of the conference and a west coast salmon barbecue at the Arthur Ericksen designed Museum of Anthropology that houses a tremendous collection of the art of West Coast native peoples. Museum staff will be on hand to provide guided tours of the acility for conference attenders. August is the most attractive month to visit Vancouver and those interested are urged to register early as many hotels will be sold out during this period. Space has been reserved for conference attenders at special prices, but reservations must be made before the end of May. In addition a limited amount of accommodation at modest prices is available at the UBC Conference Centre. Details on the program, and information on registration and UBC accommodation may be obtained at the UBC Conference website "http://www.conferences.ubc.ca/breath_info.htm" or by contacting Dr. Don Brunette, Dept. Of Oral Biology, University of British Columbia, 2199, Wesbrook Mall Vancouver, B.C. V6T 1Z3 Canada, telephone: (604) 822-2994, fax 1-604-822-6698, e-mail brunette@unixg.ubc.ca"

Don Brunette, conference co-organizer

Smell and Color

Gilbert and coworkers recently published what may be the first controlled study linking odor and color. In the September, 1996 issue of the American Journal of Psychology (109:338), the authors describe an experiment in which a panel matched 20 odors with what they felt was an appropriate color. The authors found a consensus concerning which colors corresponded with each odor. Some scents conjured up a single color (for example caramel lactone, which smells similar to maple syrup, was considered a brown odor). Other odors, such as bergamot oil (citrus scent rendered famous by "Earl Grey" tea) was rated primarily as yellow, but also as orange and green. Unfortunately, bad breath was not among the 20 odor stimuli in the study. Any guesses for color match? Send in your preference(s).

An Israeli company recently announced manufacture of a line of socks that prevent odor formation. Here is an item from fifty years ago along similar (stocking) lines.

From Scientific American, January, 1947

"It is really astonishing to find what effects odors can have on purchasers. A case in point: scented hosiery is bought in preference to unscented hosiery, but, oddly enough, a survey has shown that purchasers are not consciously influenced by the odor; they imagine that the scented goods have a better texture or a more appealing color."

cited in the January, 1997, Scientific American issue

To the Editor:

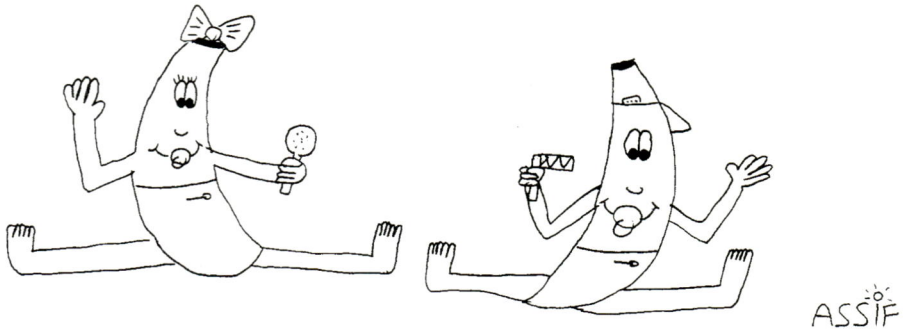
Many thanks for sending me your "Breath Odor Research" newsletter, and congratulations on a pioneering publication. As you know, I am using GC/MS technology for breath analysis. I would like to explore its potential application in halitosis. Do you know of anyone in my geographic area who has an academic interest in halitosis research and might like to work on a pilot study together?

Sincerely,

(Dr.) Michael Phillips
Chief, Division of Research, Department of Medicine
St. Vincent's Medical Center of Richmond,
355 Bard Avenue, Staten Island NY 10310-1699
e-mail: phillips@nymc.edu

Garlic Babies

In its spring, 1996 issue, the newsletter of the Monell Chemical Senses Center, "The Monell Connection", describes research from the laboratory of Dr. Julie Mennella on passage of food flavors from mothers to babies. In previous work Dr. Menella and associates have described how flavors of food sconsumed by the mother are conveyed through breast milk. In a current paper (J.A. Mennella, A. Johnson and G.K. Beauchamp, Gralic ingestion by pregnant women alters the odor of amniotic fluid. Chemical Senses 20:207-209, 1995) the authors chronicle passage of garlic odor from the diet of pregnant mothers to their amniotic fluid. Forty-five minutes before amniocentesis (routine), five pregnant women swallowed capsules containing garlic extract, and five control women swallowed placebo capsules. Odor judges determined that the odor in the amniotic fluid of the garlicky subjects smelled stronger or more like garlic than the placebo fluids. Whether this translates into a preference for pizza and salami later in later life is a matter for further debate.



ABSTRACTS, RELATED TO BREATH ODORS,

PRESENTED AT THE IADR ANNUAL MEETING IN ORLANDO, MARCH 1997

Oral malodor reduction by an oxidizing lozenge
R. BAR NESS-GREENSTEIN, S. MARKU-COHEN and M. ROSENBERG (School of Dental Medicine, Tel Aviv University, Israel)
J. Dent. Res. 76:49, 1997.

Among five products tested, only one (Desaquick Forte lozenges, Roland, Germany) significantly reduced tongue dorsum posterior malodor over three hours. Self estimation of oral malodor correlated with odor judge determinations suggesting some degree of objectivity in healthy subjects' ability to score their own oral malodor.

Ability of oral health care products to alleviate oral malodour
M. GROOTVELD, C. SILWOOD and E. LYNCH (St. Bartholomew's and the Royal London School of Medicine and Dentistry, UK)
J. Dent. Res. 76:50, 1997.

Six oral health care products were compared for their ability to reduce volatile sulphur levels (Interscan model 1170). Whereas all products except Breath Assure capsules reduced VSC initially by 3-17%, VSC levels rose to baseline values within three hours.

Relation of avoidance behavior toward oral malodour and personality
K. YAEGAKI, I. MASUI, S. SANO and T. KITAMURA (UBC, Oral Biology, Vancouver, Canada and Tsurumi University, Preventive Dentistry, Yokohama, Japan)
J. Dent. Res. 76:109, 1997.

Forty-two of the 104 subjects who were concerned with only their own oral malodour, were evaluated to be psychosomatic by the CMI (Cornell Medical Index; $p<0.05$). The authors also evaluated subjects avoidance of their own and others' bad breath.

Development of an agar medium for the detection of oral H_2S-producing organisms. (B.-F. TURNG, G.W.MINAH and W.A. FALKLER, JR. University of Maryland at Baltimore, Dental School)
J. Dent. Res. 76:226, 1997.

An agar medium was developed to detect bacterial species that use glutathione and produce VSC due to glutathione utilization. Most oral species tested yielded positive colonies.

Clinical evaluation of agar media which differentiate odor-forming bacteria
(L.G. DEPAOLA, G.E. MINAH, B. TURNG, C.J. WISNOM and J. VINCENT University of Maryland at Baltimore, Dental School)
J. Dent. Res. 76:226, 1997.

Performed a clinical study on 12 subjects in which saliva, plaque and tongue specimens were cultured on various VSC-detecting agar media, prior to and following use of Listerine™ mouthwash). Listerine produced the expected reduction of post vs. prerinse in the number of hydrogen sulfide-producing colonies.

A new volatile sulfur compounds monitor for a field study
M. SHIMURA, S. WATANABE, M. IWAKURA, Y. OSHIKIRI, K. IKAWA, M. KUSUMOTO and S. SAKAMOTO (Tohoku University School of Dentistry, Sendai)
J. Dent. Res. 76:251, 1997.

Authors compared results obtained using a new portable monitor with a zinc-oxide thin film semiconductor sensor with scores of two odor judges, yielding a highly significant correlation ($r=0.824$, $p<0.01$) in a study of 94 subjects.

Correlation of halimeter with in vivo levels of VSC
J. GRIGOR, E. HUNTINGTON, J.R. MATHESON, S.J. RAVEN, S. SANTOSI and J. TONZETICH (Unilever Dental Research, UK and Department of Oral Biology, University of British Columbia, Vancouver, Canada)
J. Dent. Res. 76:251, 1997.

Authors compared halimeter (Interscan, Chatsworth CA) with gas chromatographic measurements in a clinical comparison of dentifrices and mouthwashes. Baseline correlation was 0.793, but overall association was 0.679, as certain flavour materials affected the correlation between the two instruments. Both techniques were sensitive to expected reductions in VSC following use of zinc-containing products.

The effect of metal ions on volatile sulfur containing compounds (VSC) in the oral cavity
S.M. WAALER and G. ROLLA (Dental faculty, University of Oslo
J. Dent. Res. 76:109, 1997.

Effect of rinsing with various metal salts on VSC levels was tested using the halimeter (Interscan, Chatsworth CA) . Results showed that Zn ions had the highest effect (35% reduction), followed by Cu, Ag and Sn ions. Fe ions had no significant effect.

Association between an essential-oil dentifrice's antimicrobial and anti-oral malodor efficacies
L.C. BORDEN, J.J. MARTINEZ, A.M. OLSHAN, B.E. KOHUT, D.S. HARPER and C. HOVLIARAS-DELOZIER (Hill Top, W. Palm Beach, Florida, and Warner Lambert, Morris Plains, N.J.)
J. Dent. Res. 76:356, 1997.

The authors compared malodor reduction (using five odor judges) and decrease in microbial plaque counts following use of a toothpaste (Cool Mint Listerine dentifrice). The correlation coefficients between mean hedonic odor and total microbial counts were 0.871, p=0.005). The toothpaste had a highly significant 90 minute effect in reducing oral odor and microbial levels.

■

In vitro technique for assessing substantivity and efficacy of antimalodour agents
J. GRIGOR, M. CODIPILLY, J.R. MATHESON, N.A. PICKLES AND I. KLEINBERG (Unilever Dental Research, Port Sunlight, UK and SUNY, Stony Brook)
J. Dent. Res. 76:358, 1997.

Authors tested a novel technique for in vitro malodor elaboration involving treatment of salivary sediment with a test agent, rinsing with water, and subsequent incubation with reconstituted saliva for 24 hours. After this period VSC headspace levels are measured (halimeter) and salivary indole/skatole concentrations assessed using Kovac's reagent. Zinc sulphate caused a reduction of 86% in VSC and 48% in indole/skatole using this technique.

■

Model for determining antigingivitis activity of oral care formulations
S.L. EVERSOLE, D.R. SCHAIPER, A.L. WONG AND R.V. FALLER (Procter and Gamble, Cincinnati, Ohio)
J. Dent. Res. 76:358, 1997.

The authors tested the feasibility of a new technique to produce , harvest and monitor the presence of butyric acid in plaque, based on GC/MSD. Authors recovered approx. 50 µg/mL butryic acid.

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Vol. 1, No. 1 January 1997

Breath Odor Research

Official Newsletter of the International Society for Breath Odor Research (ISBOR)

Letter from the Editor

Our fledgling newsletter "**Breath Odor Research**" has three main purposes. The first is to act as the official organ of the newly formed International Society for Breath Odor Research (ISBOR). The second is to bring relevant information to the awareness of members and subscribers. The third is to act as a conduit for interesting new scientific findings, hypotheses, etc. Thus, we encourage our readers to submit material (subject to review) for publication in the Newsletter. This Newsletter will reach well over a thousand readers, and we will publish four issues a year. With your help, we can make this newsletter one of great value to a wide international leadership, and perhaps someday turn it into a scientific journal.

The Newsletter will carry advertisements (subject to review). Publication costs will be further offset in part by subscriptions, attached leaflets, etc.

In order to subscribe to the Newsletter, one can become a member of ISBOR or simply subscribe to the Newsletter itself (application form on page 4).

Your support is critical in getting the Society and our Newsletter of the ground!

As we go to press, Warner-Lambert Company has become our first industrial sponsor. We thank Dr. Richard W. D'Souza, Vice President of Oral Care, for this initiative, and call upon other companies in the breath odor field to lend their support.

Mel Rosenberg
Editor, Breath Odor Research and Secretary-General, ISBOR

Announcing the Third International Conference on Breath Odour

Sponsored by the International Society for Breath Odor Research
August 22-23, 1997, Vancouver, Canada

Following the success of the Second International Workshop on Oral Malodor in Leuven, Belgium last fall, Vancouver was chosen as the venue for the Third International Conference on Breath Odour. This is the first meeting to be held under the auspices of ISBOR (The International Society for Breath Odor Research), and members will be given a $50 discount on registration (to apply for membership in the Association, please fill out the form on page 4. The organizers of the upcoming meeting, Dr. Donald M. Brunette and Dr. Joseph Tonzetich, University of British Columbia, have put together an outstanding interdisciplinary program, with state-of-the-art presentation on basic and clinical research as well as clinical practice concerning bad breath. Topics presented by invited speakers include perception and psychological effects of breath odor, oral and non-oral sources of malodor, chemical and instrumental studies of oral malodor, antimicrobials, and clinical trials. We expect to receive 600 applications, and the limit is 400, so please act early!

For further information regarding content of the meeting:
Contact: **Dr. Don Brunette,**
Professor and Chairman, Department of Oral Biology, Faculty of Dentistry,
2199 Wesbrook Mall,
Vancouver, B.C., Canada V6T 1Z3
fax: 604-822-6698
email: brunette@unixg.ubc.ca

Queries regarding conference registration should be addressed to the Breath Odour Conference Secreteriat, UBC Conference Centre, 5961 Student Union Boulevard, Vancouver, BC, Canada V6T 2C9.
Telephone: (604)822-1050; Fax: (604)822-1069;
email: registration@brock.housing.ubc.ca

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In Memoriam Sy Weinstein

On May 31st, 1996, Sy Weinstein passed away suddenly. Sy was Director of New Product Concepts at Warner Lambert. It was largely due to Sy's vision that Warner Lambert sponsored the First International Workshop on Oral Malodor in 1993. Subsequently, Sy proposed Warner Lambert's support for publication of the book "Bad Breath:Research Perspectives" (Ramot Publications-Tel Aviv University, 1995). Sy represented Warner Lambert at the Second International Workshop on Oral Malodor in Leuven, Belgium in 1995, and recently participated in Scientific Frontiers in Oral Malodor, held at UCLA in March, 1996 (photo).

Sy Weinstein (second from left) with friends following the UCLA seminar on Bad Breath, March, 1996.

In his role as Director of New Product Development for Warner Lambert, Sy spent much of his time in contact with investigators in oral research in general, and breath odor research in particular. His integrity, charm and great sense of humour coupled with a rare, infectious curiosity endeared him to all. We mourn the loss of a great colleague and wonderful friend.

In an open letter dated July 19th, 1996, Lester Isbrandt wrote the following: *"Sy lived life to the fullest and made every attempt to seek and share new knowledge. He also was a good friend. I was struck by a comment made at Sy's memorial service by one of his former colleagues at Sterling Winthrop. He said Sy had the unique ability of being your close friend. The surprising element of that was that Sy had thousand of close friends. Through this friendship, he helped all of us in our daily task by helping us to examine all possible opportunities for the things that we were involved with."*

Message from the President

The last 3 to 4 years have been whirling concerning breath odour research.
The initiative of Mel Rosenberg in organising a first international workshop followed by the editing of the first 20th century textbook on the subject has led to a dramatic rise in interest of both clinicians and scientists. The number of participants at the second World Workshop at the Catholic University of Leuven, two years later, was increased threefold. Even some 20 applicants had to be refused. The next meeting in Vancouver in 1997 will attract so many people that the format will have to be changed from a workshop to a conference.

At the meeting in Leuven it was felt that since the subject is so multi-disciplinary it needed to have a organised forum by itself. This is the reason of the creation of the International Society for Breath Odour Research over which I am proud to preside. There are several much more knowledgeable people in the field, which would have been better placed for this, but the committee felt otherwise.

The input from the members of the committee with their very different backgrounds, reaching from ENT to chemistry and from microbiology to periodontology will prove invaluable. The society will especially try to avoid commercialism and misinformation towards the public. This will not be an easy task. Indeed some "bad breath centres", lacking scientific ground or expertise, have popped up in several countries. Some companies concentrate their campaigns on rinses that purely mask breath malodour while not encouraging proper diagnosis and treatment.

These challenges lay ahead. ISBOR is the ideal forum to deal with them and to keep us informed in a vast world network.

Prof. D. van Steenberghe
President, ISBOR

The San Francisco Tea Party

At the annual IADR meeting in San Francisco (March, 1996), several abstracts were presented related to oral malodor. Among these, several papers extolled the anti-malodor virtues of tea. Check out:

■ *Tea extracts reduce volatile sulfur compounds produced by oral pathogens. L. Hwang and C. Hwang. J. Dent Res. 75:188, 1996*
Among various Taiwanese teas tested, the black tea extract demonstrate the most pronounced ability in inhibiting volatility of methyl mercaptan (75%). The authors proposed that this may be related to the relative degree of polymerization of the polyphenolic compounds present in tea extracts.

■ *Growth inhibitory activity of Taiwanese teas agains odor-producing oral pathogens. S. Tono et al., J. Dent Res. 75:317, 1996.*
The authors examined the effect of three Taiwanese tea extracts on the growth of VSC-producing bacteria. The tea with the highest quantity of both catechins and total polypenolics exhibited the strongest growth inhibtor effect on all the bacteria tested. The authors conclude that tea may help reduce oral malodor by bacterial inhibition.

Other abstracts of interest presented at San Francisco include:

■ *Effect of alcohol and non-alcohol mouthwashes on composite restorations. E.L. Hoang et al., J. Dent Res. 75:146, 1996*
Finding: Composites soaked in alcohol-containing mouthwashes gained significantly more weight than composites soaked in non-alcoholic mouthwashes.

■ *Methyl mercaptan modulates collagen processing. P.W. Johnson et al., J. Dent Res. 75:324, 1996*
Finding: Methyl mercaptan alters expression and processing of collagens in vitro.

■ *Methyl mercaptan modulates the expression of alpha5beta1 in periodontal cells. H.L. Lancero and P.W. Johnson. J. Dent Res. 75:324, 1996*
Finding: Methyl mercaptan inhibits intracellular processing of at least one integrin beta1 and reduces amounts of this integrin subsequently transported to the cell surface.

■ *VSC inhibiting activity of experimental mouthwashes. P. Giani et al., J. Dent Res. 75:195, 1996.*
Authors tested mouthwashes containing Zn, Zn plus triclosan and a placebo for inhibition of VSC production in vitro by challenging oral bacteria with a cysteine rinse. Authors found that the combination of antibacterial agents was most effective. They propose that a cysteine challenge rinse, followed by VSC measurement with the Halimeter (Interscan Corp., Chatsworth CA) is a rapid and simple method of testing for mouthwash efficacy.

■ *Methyl mercaptan concentration during experimental gingivitis in man. Y.H. Ko et al., J. Dent Res. 75:195, 1996.*
Researchers measured increase in methyl mercaptan concentration using the Bad Breath Checker (Tokuyama Soda Co., Japan) as a function of development of experimental gingivitis. They found an overall increase in concentration over the three week study, with peak levels 14 days following cessation of oral hygiene activity.

■ *Changes in dental and malodor-associated parameters one year following a bad breath consultation. M. Rosenberg et al., J. Dent Res. 75:264, 1996*
Researchers found that one year following an initial bad breath consultation, subjects showed an overall improvement in whole mouth odor and saliva odor, but not tongue odor. Subjects, in contrast, gave themselves reduced scores in tongue odor, but not whole mouth or saliva odor. Authors suggest that a bad breath consultation may lead to improvements in malodor, but not in one's own ability to estimate malodor levels

Letters to the editor

An ENT View on a Multi-disciplinary Halitosis Polyclinic

When confronted with a complaint of halitosis, the ENT specialist will autmatically start to ask for additional information on the nose, sinus and onsils. He/she will subsequently perform a standard ENT examination focusing on the nose, sinus, tonsils and cervical lymph nodes. In about 80% of the cases no manifest anomality of these structures will be found and he will have to start thinking again. He then might choose between a few different options: continue to think along ENT- lines, i.e., order sinus X-rays or even CT scans of the maxillofacial complex depending on the availability, start to worry about pulmonary or gastric ailments, refer the patient to the department of medicine, or send the patient to a nearby psychiatist, especially when there is no apparent odor. The ENT specialist usually is not trained to look after the periodontium and teeth, except the oncologist among them. However, periodontal problems are the cause of about 60% of the cases. So it seems a good idea to have a periodontologist on hand, who has knowledge of both teeth and periodontal tissues. Another anatomical site of consideration is the tongue dorsum. Only a few ENT specialists take their time to examine that area properly.

When we arrived at the conclusion that it required more than an ENT surgeon's training to study halitosis it seemed but a short step to start a muldisciplinary polyclinic. The first two patients took a whole month to arrive. Now, 18 months later, we see between twenty and thirty patients a month. Moreover, we seem able to help about 80% of the them, taking both specialities together and asking occasional advice from our medical colleagues, and, on two occasions, a psychiatrist.

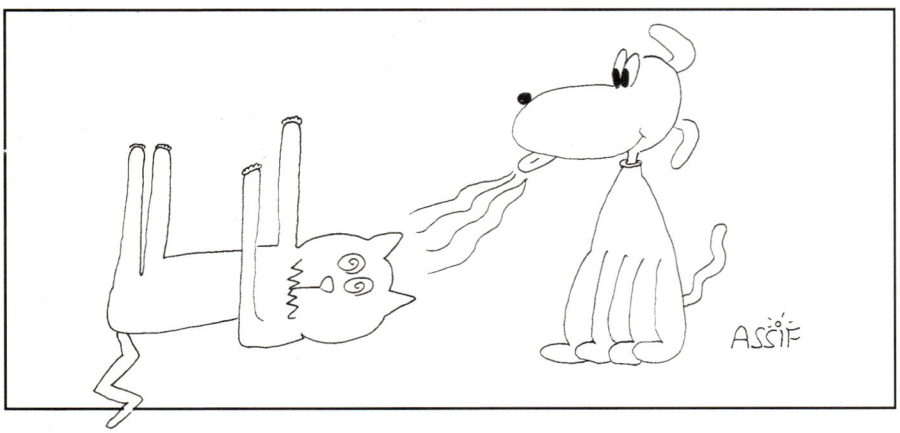
Prof. L. Feenstra
Dr. G. Delanghe
Catholic University Leuven, Belgium

Beagle Breath

Oodles of dog and cat owners are often offended by their pet's bad breath. While spared the onerous chore of telling the offending party, they are on the prowl for anti-malodor pet foods and doggone mouthwashes. If your pet's breath is really unbear-able, head on down to California where several fresh pet breath clinics have recently been set up.

Last September, an article entitled "Oral Malodor in Dogs: Measurement using a Sulfide Monitor" appeared in the Journal of Veterinary Medicine (12:101-103). The authors studied 28 dogs owned by veterinary students "who complained that the dog had oral malodor." The authors measured volatile sulphides using a Halimeter (Interscan Corp., Chatsworth CA) fitted with a hard plastic syring core, which enabled its insertion in the mouth between the dog's incisor teeth. The authors reported a highly significant correlation (Spearman $r=0.67$; $p<0.0001$) between Halimeter values and odor judge scores.

At the IADR meeting in San Francisco this past March, J.M.Warrick (Indana University School of Dentistry) presented an abstract entitled "Reducing oral malodor and calculus formation in dogs" (J. Dent Res. 75:430, 1996). Beagle dogs in the experimental group were treated to biscuits coated with 0.6% sodium hexametaphosphate. For odor judge scores and halimeter readings of volatile sulphides, the 25 beagle dogs had to be anesthetized (no data were available on post-measurement medical attention provided to odor judges). Levels of calculus, VSC and odor judge scores were concomitantly reduced in the experimental group as opposed to control doggies.



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Vol. 3, No. 1 June 1999

Breath Odor Research

Official Newsletter of the International Society for Breath Odor Research (ISBOR)

Dear colleagues,

At a special luncheon held during the Vancouver IADR meeting this past March, Dr. Ken Yaegaki and Dr. Hideo Miyazaki presented a proposal for a classification and treatment regimen for bad breath, based on a Japanese protocol which has recently gained acceptance. Their proposal appears in this newsletter. Hopefully, it will stimulate debate on this important topic among ISBOR members. Elsewhere in the newsletter, I have suggested a proposal for professional guidelines which I would also like to open for discussion.

The Fourth International Conference on Breath Odor is just around the corner. It will be held August 20-21, 1999, at the Sunset Village on the UCLA campus. There is an exciting scientific program with over 50 presentations, and we expect a large turnout. Members are invited to attend the general meeting of ISBOR which will be held during the conference.

For more details, contact UCLA Continuing Education, telephone: 310-206-8388; fax: 310-206-5281, or e-mail scotk@dent.ucla.edu. You can also visit the website at: www.dent.ucla.edu/ce

Mel Rosenberg
Editor, Breath Odor Research and
Secretary-General, ISBOR

Editorial

Dr. Walter J. Loesche, President ISBOR

The Fourth International Conference on Breath Odor Research, the official meeting of the International Society for Breath Odor Research (ISBOR), will be held on August 20 & 21st at the University of California in Los Angeles. It will be an ambitious program with over 50 presentations, and a pre-conference meeting (August 19th) that will feature a Workshop on the classification of the various forms of malodor. Credit goes to Mike Newman and Susma Nachnani for their efforts in organizing what appears will be our largest meeting ever. This meeting builds on the sound scientific achievements of the previous meetings hosted by Mel Rosenberg at Tel Aviv, Daniel van Steenberghe at Leuven and Don Brunette and Joe Tonzetich at Vancouver, and is testimony to the growing realization that breath odor research is important to patients and involves research issues that are multidisciplinary in scope. All meetings have been notable for the involvement of physiologists, biochemists, molecular biologists and psychologists who are concerned with the physiology and pathophysiology of sensory perceptions. The UCLA meeting follows in this grand tradition. The success of ISBOR as a gathering place for multiple disciplines and as focus point for clinical issues brings new responsibilities. Concerns over oral malodor are common among the public and the treatment of these concerns

At the First International Meeting, Herzlia, 1993

has been recognized by many dentists as a valuable service to provide to these individuals. I hesitate to call these individuals patients, because the majority of them have a form of oral malodor that originates from the overgrowth of bacteria on the tongue, so that we are dealing with a tongue hygiene problem, not a disease. This seeming nuance is an important consideration from a regulatory perspective, and is the reason why several anti-malodor mouthrinses, gels, etc. can be promoted as effective in the treatment of oral malodor in the absence of double blind clinical studies. This situation may change as the American Dental Association is developing acceptance guidelines for "Products used in the treatment of oral malodor", and these guidelines will be discussed at the Workshop, and a report on the Workshop will be made to the participants of the meeting. Yet other individuals with complaints of oral malodor are truly patients. A few have an oral malodor that reflects periodontal disease, and some others have an underlying medical condition. Both of these groups need to be treated differently than those with a tongue hygiene problem. And there are a surprising large number of individuals, usually those who self-diagnose themselves as having an oral malodor, who actually have no detectable odors. These latter individuals also will benefit less from procedures to promote tongue hygiene. They need advice and counseling, and a few may benefit from psychotropic medications. Thus the problem of oral malodor is neither trivial to the individual, nor the underlying cause of such, obvious to a nose. Guidelines are needed to bring some degree of uniformity and discipline to the treatment of these individuals.

Ken Yaegaki and Hideo Miyazaki convened a small working group at the recent IADR meeting in Vancouver to propose guidelines for the classification of the various forms of halitosis. The meeting was lively and necessary, for it illustrated an uncertainty about certain fundamental concepts related to oral malodor, namely how to measure oral malodor quantitatively. This is important in any clinical study, as one wants to measure the degree of improvement. Organoleptic scores have to be measured, as this addresses the complaint that brings the individual in for treatment. But which of the several organoleptic scores that have been reported in the literature should be used, and how can you account for individual differences between odor judges? This issue will be addressed in the workshop, and is the subject of several of the research presentations at the conference. One of the dilemmas of treating an individual for oral malodor is that the individual him/herself can not ascertain when there is an improvement. As will be discussed by several presenters at the meeting, malodor can be detected reliably by the acquaintances of the individual, but the individual him/herself is a poor judge of his/her own malodor. Thus, people seeking treatment cannot monitor their improvement on their own. This creates a potential ethical problem if the treating clinician is the sole communicator of information on the degree of improvement to the individual. To guard against this situation it maybe necessary to involve an acquaintance of the individual in the monitoring of the improvement associated with the treatment process. This inability of the individual to subjectively recognize any improvement increases the utility of surrogate outcome measurements, such as devices and reagents that measure volatile sulfur compounds in exhaled air, or the levels and/or types of bacteria that are on the tongue, in saliva or plaque. The outcome from these measurements can be seen and appreciated by the individual, and can be useful in assuring him/her that tangible improvement has occurred. The most widely reported surrogate outcome is the reduction in volatile sulfur compounds in exhaled air, which can be easily measured at chairside with a sulfide monitor. These volatile sulfur compounds decrease noticeably with most successful treatments, and correlate significantly with organoleptic scores. Yet such monitors, while affordable given the alternative of a gas-liquid chromatograph, are moderately expensive, and measure only some of the foul smelling products which contribute to oral malodors. Clearly other less expensive surrogates, or combination of surrogates, are needed to assist both the clinician and the individual in the treatment of individuals with true oral malodor, and to assure those without malodor that they are indeed free of at least noxious volatile sulfur compounds in their breath. These issues will be discussed at the pre-conference workshop and during the meeting. I believe that it is the responsibility of the members of ISBOR to develop guidelines that will facilitate the correct diagnosis and care of the many individuals who present in dental clinics and offices seeking treatment for oral malodor(s). I urge you to attend the 4th International Conference and to contribute to the development of these guidelines.

Proposal: A Protocol for Bad Breath Diagnosis and Treatment

Ken Yaegaki and Hideo Miyazaki

Halitosis involves very complicated pathology, however the clinical and practical classification of halitosis is still obscure. Additionally, specific criteria for classifying psychosomatic halitosis, which should be treated by a specialist, are not clear. The clinicians have dilemmas posed by psychosomatic halitosis patients. Because of dental clinician's confusion, many of so-called psychosomatic halitosis patients are not well managed. In order to resolve the clinicians' confusion, a simple clinical classification of halitosis with corresponding treatment needs is required. Already four years have passed since ISBOR (International Society for Breath Odor Research) was established.

Now is a time to create a clinical classification of halitosis with corresponding treatment needs.

■ **Several months ago, Treatment Needs for Halitosis and Clinical Classification of Halitosis with Corresponding Treatment Needs** were established in Japan and accepted by Niigata Dental Journal and the Quintessence in Tokyo. Based on their documents, Drs. Tonzetich, Coil, Brunette and Yaegaki modified them to adapt to western society. We believe, this tentative classification can provide a good start of the discussion.

■ **Treatment Needs (TN) for Breath Odor**

Treatment needs (TN) vary with different halitosis entities as presented in the classification of halitosis. TN is thus categorized into the following five levels (TN1 to TN5). The notes below suggest a treatment regimen that is relevant to each level of TN.
TN1: Explanation of halitosis and instructions for oral hygiene (Support and reinforcement of a patient's own self-care for further improvement of their oral hygiene). TN1 is applicable to all cases requiring TN2-5 described below. TN2: Oral prophylaxis (Professional cleaning) and treatments for oral diseases, especially periodontal diseases. TN3: Referral to a physician or medical specialist. TN4: Explanation of examination data, further professional instruction, education and reassurance for improvement of the condition. TN5: Referral to a clinical psychologist, psychiatrist or other psychological specialist.

■ **Classification of Halitosis with Corresponding Treatment Needs**

(TN) I. Genuine Halitosis Obvious malodor intensity beyond the socially acceptable level is perceived. a. Physiologic Halitosis TN1* Malodor arises through putrefactive process within the oral cavity. Neither specific disease nor pathologic condition, which could cause halitosis is found. Origin is mainly the dorso-posterior region of the tongue. (Temporary halitosis, due to dietary factors, e.g., garlic breath, should be excluded.)

b. Pathologic Halitosis 1. Oral Pathologic Halitosis TN1 and TN2 * Halitosis caused by disease, pathologic condition or malfunction of oral tissues. (Halitosis, derived from tongue coating modified by pathological condition, e.g. periodontal disease, xerostomia etc, is included in this category.)

2. Extraoral Pathologic Halitosis TN1 and TN3* Malodor originates from nasal, paranasal and laryngeal regions. Malodor originates from the pulmonary tracts. Malodor originates from the upper digestive tracts. Malodor originates from disorders anywhere in the body whereby the odor is blood-born and emitted via lungs (Diabetes mellitus, hepatic cirrhosis, uremia, internal bleeding, etc.).

II. Pseudo-Halitosis TN1 and TN4 * Obvious malodor is not perceived by others, although a patient stubbornly complains of the existence of his/her halitosis. Improvement of this condition is highly promising by explanation of examination results, counseling and simple treatment measures (TN1 and TN4).

III. Halitophobia TN1 and TN5 * After treatment for genuine halitosis or pseudo-halitosis, a patient persists in believing that they have halitosis, although no physical nor social evidence exists to suggest their belief.

I. Conditions for Breath Odor Assessment

a. Before the day of assessment patients are instructed to abstain from:

1. taking antibiotics 3 weeks prior to assessment.
2. garlic, onion and spicy foods for 48 hours before assessment
3. scented cosmetics for 24 hours before assessment

b. On the day of assessment patients are instructed to abstain from:

1. food and drink
2. oral hygiene practices
3. use of oral rinse and breath fresheners
4. smoking for 12 hours before assessment

II. Instructions to oral malodor judge

The judge is required to refrain from drinking coffee, tea, juice, smoking, and using scented cosmetics prior to the assessment. The judge must have a normal sense of smell.

III.Organoleptic Scoring Scale

1. Absence of odor - Detectable odor is completely absent.
2. Questionable - Odor is detectable though a judge could not recognize it as malodor.
3. Slight malodor - Odor is deemed to exceed the threshold of malodor recognition.
4. Moderate malodor - Malodor is definitely detected.
5. Strong malodor - Strong malodor, but examiner can tolerate at this level
6. Severe malodor - Overwhelming malodor. Examiner can not tolerate malodor at this level. (Examiner instinctively has to avert the nose because of overwhelming malodor)

*TN1: Explanation of halitosis and instructions for oral hygiene (Support and reinforcement of a patient's self-care for further improvement of their oral hygiene) .

*TN2: Oral prophylaxis and treatments for oral diseases, especially periodontal diseases.

*TN3: Referral to a physician or medical specialist.

*TN4: Explanation of examination results, further professional instruction, education and reassurance for improvement of the condition.

*TN5: Referral to a clinical psychologist, psychiatrist or other psychological specialist Examination for Halitosis Organoleptic measurement (Sensory test) is required. Original odor, which is not diluted with room air, should be examined. To make a reliable diagnosis, the oral malodor assessment should preferably be carried out on different days (on two or three different days, if possible). This is especially important when either pseudo-halitosis or halitophobia is suspected.

Proposal: Professional Guidelines in Bad Breath Diagnosis and Treatment

Mel Rosenberg

We all know people who suffer from bad breath, and many of us have had the courage to tell family people and close friends. But when we charge money for assessing someone's bad breath, we become bad breath "professionals". Should ISBOR recommend general professional guidelines for bad breath professionals? If so, I suggest something along the following lines:

1. Professionals who counsel individuals regarding bad breath should have appropriate expertise in this area, including but not limited to the following:
- extensive up-to-date knowledge of the scientific/medical literature on the origins and causes of bad breath, and the various treatment methods available.
- The ability to smell and to distinguish typical and atypical odors coming from various sources in the oral cavity and the nose.

2. Although instrument-based testing methods are available and may be helpful, any diagnosis should be based first and foremost on odor judge assessment and comparison of the quantity and quality of odor coming from the individualís mouth and nose.

3. Professionals should weigh potential benefits and risks before recommending any given treatment regimen.

4. Any individual with bad breath which does not resolve rapidly, or which has a peculiar nature should be referred promptly to an appropriate physician.

5. Any complaint of bad breath should be taken seriously, whether or not the professional can verify the presence of an actual odor.

6. Professionals who have a vested interest (commercial or otherwise) in recommending a particular type of diagnosis or treatment should make this clear to the individual seeking counsel.

7.Tongue cleaning recommendations should emphasize the need to clean the tongue dorsum gently, and the importance of cleaning the posterior region.

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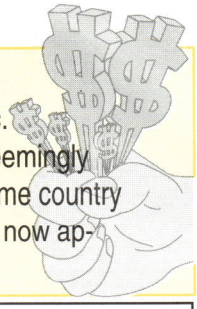
"We have also sharpened our business-building skills with seemingly small products. Our Altoids mints have traveled from their home country the United Kingdom, to sweep the United States, where they now approach the $100-million revenue mark."



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School of Dental Medicine,
Tel Aviv University,
Ramat Aviv, Tel Aviv 69978, Israel

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Vol. 2, No. 1 February 1998

Breath Odor Research

Official Newsletter of the International Society for Breath Odor Research (ISBOR)

Dear Colleagues,

Members of ISBOR are now linked to one another in a listserv list (breath-research@vm.tau.ac.il), and one member can e-mail all others simultaneously. Non members interested in accessing our membership with relevant material can also address mail as above. This should provide a highly advantageous communications resource for all our members. Please note that posting of commercial material is prohibited, both because of the academic nature of the site, and the mandate of our Society. Hopefully, ISBOR will soon have its own website. In the meantime, information on the Society can be obtained via the Tel Aviv University bad breath research site (http://www.tau.ac.il/~melros/Welcome.html).

Our 1998 general meeting will be held during the IADR meeting this June (24th-27th) in Nice, France. More information will be sent out to members as soon as it is available.

Preparations for the 4th International ISBOR meeting (UCLA, September 10-12th, 1999) are now in progress and if you have suggestions, please contact Michael Newman at MGNewman@aol.com.

The Society has received a generous gift of $3,000 from **Warner Lambert**. Our thanks to Dr. Richard W. D'Souza of Warner Lambert. We are also grateful to our new corporate members, **Colgate-Palmolive** and **Unilever Research.**

I look forward to your comments, thoughts, and hopefully, contributions to our coming newsletter!!

Best wishes for 1998,

***Mel Rosenberg,** editor*

Letter from the President

Our organization is off to a very good start with over eighty members and three successful meetings. There is a fair amount of optimism borne of finally addressing one of the chief oral complaints that brings a patient to the dentist, namely bad breath. Our initial meetings have been one of discovery, as various disciplines discover overlapping interest. For example, at the Vancouver meeting the sensory physiologists were surprised to hear of the psychological components of smell. Yet despite this optimism for the future , we must be aware of some profound weaknesses in malodor research, which we as a group need to make among our top priorities in the coming years.

The first deals with the actual prevalence of malodor among various populations. There is no body of epidemiological studies which describes the prevalence of this problem in any given population. Advertisements seeking subjects with malodor for clinical trials often elicit many inquires, suggesting that the problem is common, or that people with the problem are anxiously seeking treatment. But this is not the same as well designed epidemiological studies to provide accurate prevalence figures. Japanese investigators have published the most on this subject, and we should pay heed to their findings. They find that some individuals have no physical evidence of malodor, but rather their complaints of such odors seem to be based on the presence of certain phobias. This has been confirmed by other studies, and indicates that the individual with a complaint of malodor, but without evidence of such, may have an underlying psychological condition, which in itself is a fascinating area of research. Thus, one of the outstanding needs is reliable data on the prevalence of malodor among various age groups and communities.

The second major concern is that we have very little data on the pathophysiology of oral malodor. What we do know is very preliminary, i.e., bacteria on the tongue, most likely anaerobes, are producing volatile sulfur compounds, volatile fatty acids and other obnoxious compounds from proteinaceous products. But this is too simple a statement. Which bacteria are involved? Is it a limited number of bacterial species, or is it a broad-based overgrowth of all, or most bacterial species? The answer to this might help in the management of the problem. Just what are the bacteria fermenting? What is the nature of the proteinaceous substrate? Is it host derived?; salivary derived?; dietary derived?; or something else? Can we reduce the microbes' access to this substrate(s) and thereby control the malodor, or do we have to attack only the microbes?

The third area of concern relates to our treatment options. There is enough anecdotal evidence that mechanical debridement of the tongue and the usage of antimicrobial mouth rinses offer some help for most people for some period of time. But it is unlikely that well-controlled clinical studies, which document this benefit, will ever be performed. This is because the mechanical brushes, scrapers, etc. do not come under the regulatory jurisdiction of agencies such as the FDA, and chemical antimicrobial agents such as zinc salts, cetylpyridinium chloride, and chlorine dioxide are generic agents that any company can use without paying license

fees. If a company were to spend hundreds of thousands of dollars to perform a multi-center study using one of these agents in order to show efficacy in reducing oral malodor, then its competitors could spend less money showing that a comparable agent could have the same effect. The company which has the best advertisements would most likely capture the market. It remains to be seen whether novel agents or novel combinations, such as the CPC oil/water mouthrinse developed in Israel, will generate enough funding to perform the scientific clinical studies which document efficacy and safety with long term usage.

All of these concerns reflect the relative absence of research funding in the area of oral malodor. I do not know of any grant on oral malodor that has been funded by the National Institute of Dental Research. This could reflect that no one has approached this agency with a competitive research proposal, or determined whether this is an area of research that does not play well with a peer review group that is oriented toward basic science. I do not know of the experience with research funding bodies elsewhere in the world and would welcome feedback. Industry-based research on oral malodor seemed to stop in the 1980s after Joe Tonzetich's classic studies on the nature of oral malodor. At the Vancouver meeting only Colgate presented research on the efficacy of Triclosan in reducing malodor. Industry was represented in a sense (no pun intended) by the International Flavours and Fragrances, Inc., but this was oriented towards the design and development of "good" odors that sell products.

Oral malodor is a complex clinical condition and the many scientific and clinical disciplines that can explain this problem need to work together. Our newly formed organization, provides a forum for communication between these diverse groups, and can serve as a catalyst for the collection of scientific data needed to 1) identify the various types of malodor, if indeed more than one type exists; 2) to understand the pathophysiology of malodor; and 3) to recommend safe and effective treatments based on the pathophysiology.

Walter Loesche, President, ISBOR

ISBOR: First Business Meeting

The first business meeting of ISBOR was held on August 23rd, 1997 at the Third International Conference on Breath Odor in Vancouver. Thirty members were present. Decisions were as follows:

1. The current bylaws of the society were unanimously ratified.
2. The Fourth International Conference on Breath Odor will take place in 1999 in Los Angeles. Michael Newman was unanimously elected program chairman.
3. The financial report as presented by Mel Rosenberg was unanimously approved.
4. Daniel van Steenberghe, stood down from his role as the first President and was thanked for his efforts in establishing the Society (Dr. van Steenberghe will be past president of the Society from August 23rd, 1977 for the coming two years).
5. Walter J. Loesche's role as incoming President was unanimously ratified (Dr. Loesche will be president and officer of the Society from August 23rd, 1977 for the coming two years).
6. Donald Brunette was unanimously elected as incoming Vice-President (Dr. Brunette will be vice-president and officer of the Society from August 23rd, 1977 for the coming two years).
7. Mel Rosenberg's role as Secretary General was unanimously ratified (Dr. Rosenberg will be Secretary General and officer of the Society from August 23rd, 1977 for the coming two years).
8. Joseph Tonzetich was unanimously elected an honorary member of the Society.
9. The board of the Society was proposed and accepted unanimously: Daniel van Steenberghe, Walter J. Loesche, Donald Brunette, Mel Rosenberg (ex officio), Joseph Tonzetich, Louw Feenstra, Hideo Miyazaki, Michael Newman, Israel Kleinberg.
10. Several committees were appointed:
    Nomination and bylaws (Israel Kleinberg, chair; Jeffrey Coil; Louw Feenstra)
    Meetings Committee (Michael Newman, chair; Hideo Miyazaki, Donald Brunette, Daniel van Steenberghe)
    Control Committee (Ken Yaegaki, Andrew Spielman)

Comment

Is the Dentist Truly the Phyisican of the Mouth?

Those who were trained and who have practiced in my generation of dentists were taught that oral halitosis-breath malodor resulted from decayed teeth, infected gums, infected tonsils or G.I. tract regurgitation. When we eliminate or rule out those purported causes, we are usually at a loss of explaining continued bad breath. In general, we have been unaware of a growing body of evidence, from sciences peripheral to dentistry, which points to more likely causes.

Pioneering work by Tonzetich, Loesche and others has directed our attention to microorganisms which reside primarily on the posterior dorsum of the tongue. Principally bacteria, these proteolytic gram negative organisms have the capacity to produce hydrogen sulfide and mercaptans as a result of their metabolic processes. These chemical compounds have characteristic odors which are offensive. Often they are such strong odors that they

affect personal relationships, workplace success and lifestyle acceptability.

Periodontists should have a special interest in this area of oral medicine. The microorganisms most often associated with inflammatory periodontal diseases are similar (and perhaps identical?) to those implicated in proteolytic activity which results in the production of noxious, sulfur-containing compounds in the mouth. The interrelatinship of periodontics, oral medicine and oral microbiology is well-known.

Chemical and microbiological technologies are available to localize and diagnose the sources of oral malodor. They are readily adaptable to chairside periodontal and dental treatment delivery systems.

This opportunity to help our patients and to expand the scope of periodontal services should not be lost on our specialty. At a time when dental and medical practice are increasingly competitive and undercompensated, doctors are looking to perform elective services which are highly valued by patients. Cosmetic and implant dentisty, while rearely covered by reimbursement plans, are areas of great activity in modern dentistry because they are desired and valued by the public. The basis for much of this demand is social acceptability. The next wave of modern dental practice with great promise is the diagnosis and management of oral malodor.

A.D.A. Past-President Joe Devine liked to advise us that, "If you want to be treated like a doctor, you must behave like a doctor!". This area of oral medicine is ripe with opportunity for true professionals. It should not be left to those who build multi-level marketing schemes to increase practice profits while ignoring the considerable science available to us. Dental and periodontal offices should be diagnostic and treatment centers, not retail outlets which promote and sell products of questionable value. For those interested in advancing the specialty of periodontlology and the status of dentistry, attention to Dr. Devines' admonition is warranted.

Robert T. Ferris, **D.D.S., Ph.D.**
President, American Academy of Periodontology

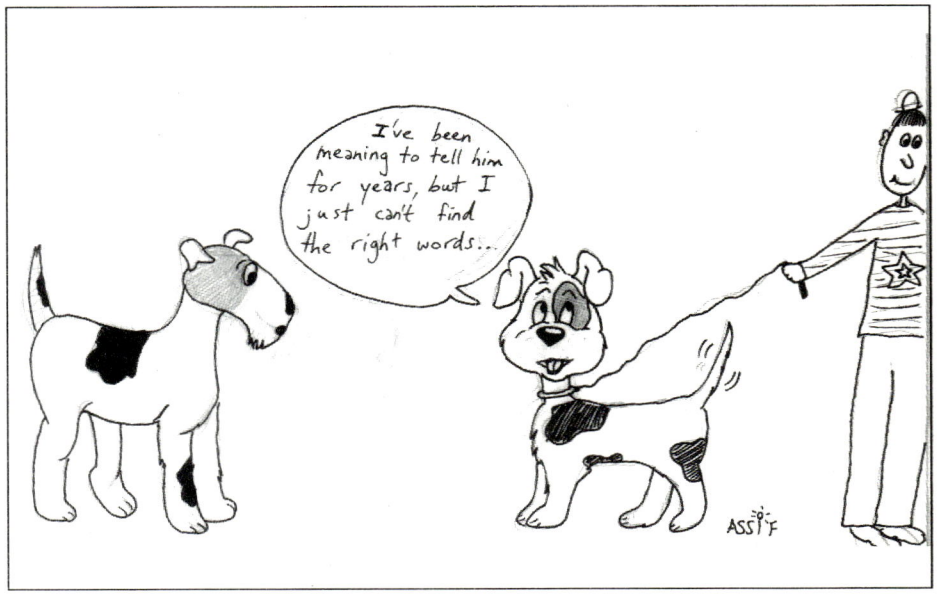
How can you tell someone that he/she has bad breath?

There is no good answer for this question. Certainly, one should level with someone in one's own family. Telling friends, people at work and other acquaintances is sure to be embarassing. Several e-mail correspondents have suggested the following:

"Hi, maybe you could send your recomendation in a piece of paper hidden in the locker or the desk of the person"

"My tactful method is not to tell someone they have bad breath, but to lead them to making that conclusion themselves. This is most easily done by asking a question: 'Did you have garlic for lunch today?'"

Editor's note: How about sending them an issue of our latest newsletter?



Case Report

The following is a recent case which is, in some aspects, typical of many "halitophobic" women (mostly in the 30's to 40's age group) whom we have seen over the past years. It stands out in two aspects: the lengths to which she took to conceal her problem on the one hand, and her eventual ability to confront the problem and inform her husband.

Female, married, no children. Age 26. Works as primary school teacher. Dress informal but impeccable, well groomed. Married for one and a half years. Has been plagued by the "knowledge" that she has bad breath since age 13 when she noticed that the bad taste in her mouth was not eliminated, even following chewing gum (she had previously chewed gum, but this apparently eradicated the bad taste). Noone ever told her she has bad breath, but this has been on her mind ever since. She never had discussed this problem with her husband, and managed to "conceal" it from him. After she repeatedly refused to "French ('deep') kiss", he felt insulted, and inquired whether there was anything wrong with him. She told him that she had a

serious problem, causing him to assume the worst, i.e., that she had been raped or abused. She was not able to discuss her problem with him face-to-face, but managed to get up the nerve to write him a letter telling him that she suffered from bad breath. Her husband subsequently telephoned to make the appointment, and told the examiner that he did not think that his wife actually suffered from bad breath. He was encouraged to come along with his wife, but she refused. On a scale of zero to five she rated her own oral malodor as a "four or five". She was not sure whether the examiner could smell her across the table (a distance of approximately one meter). She explained her husband's inability to smell her bad breath as "My husband's sense of smell is not developed".

In the examination, she was found to have zero-to-barely perceptible odor. Directly before the odor judge assessment, she broke down in tears. When asked why, she responded "It's just that I have worried about this for so many years".

In subsequent conversations, she discussed several activities she pursued to control her bad breath. She tended to clean the inside of her mouth with moist towelettes, and took care when speaking with people outdoors to stand downwind so that the wind would blow towards her face. She had recurrent dreams associated with bad breath (she is too close to others and they can "tell" or her teeth fall out, etc.). She feels that she has succeeded in life, "despite this inhibiting factor".

Mel Rosenberg** and **Efrat Leib

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Breath Odor Research

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Breath Odor Research

Official Newsletter of the International Society for Breath Odor Research (ISBOR)

Dear Colleagues,

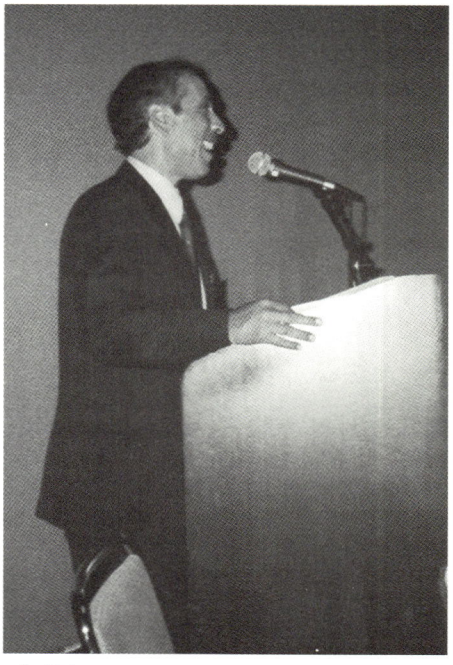
The Fourth International Conference on Breath Odor (August 20-21,1999) was a great success. From a scientific viewpoint, it surpassed our previous meetings, featuring over 50 presentations. From a social viewpoint, UCLA and the surroundings provided a perfect venue to over 250 participants. Thanks to Mike Newman and the organizing committee who did a splendid job (special thanks are due to Perry Krokevold for outstanding work on the abstracts and scientific content, to Sushma Nachnani for her organizational skills and to Fariba Younai for her help throughout the meeting). Kudos to Dr. William Yancey and his team at the Continuing Education Department for the preparation of the abstract book and all the technical support. In a word, a job well done. At the general meeting, ISBOR decided to hold its next international conference (2001) in Japan and the sixth conference in Tel Aviv (2003).

Our next general meeting will be during the general session of the IADR in Washington, April 1-4, 1999. A notice to our members will be sent out.

To those readers of our newsletter who are not ISBOR members, please take a moment and fill out the application on the back page. ISBOR is solely dedicated to promote research on breath odors and to disseminate scientific information on bad breath throughout the world. We publish newsletters, organize meetings, and will soon have our own website (www.isbor.org) which will contain an extensive bibliography of papers dealing with bad breath research.

To all our members and readers, may the coming year be one of health, happiness, betterment and better smells.

Mel Rosenberg
Editor, Breath Odor Research and
Secretary-General, ISBOR



The Fourth International Conference on Breath Odor

SUMMARY OF ABSTRACTS presented at

THE 1999 IADR MEETING (VANCOUVER)

Abstract 1149
Factors influencing mouthwash rinsing time. J Stephens, CA Munoz, J Kettering, M Hoffer, N Melendy, T Windemuth (Loma Linda, CA, USA)
Data collected in the study suggest that mouthrinse users rinse for approximately half the time suggested by manufacturers, with mean times ranging from 9.6 to 16 seconds. Burning sensation and the subject's feeling they had rinsed long enough were the most common reasons for expectoration.

Abstract 1152
Biological Inhibition of tongue coating accumulation. K Yaegaki, JM Coil (UBC, Vancouver, Canada)
Saccharomyces genus, a yeast used in the food industry, when applied to the tongue, resulted in significant reductions in VSC and tongue coating (81% and 89%, respectively). Other microorganisms tested were not effective.

Abstract 1160
Survey of halitosis in dental patients. Y Mau, H Malmstrom, DT Zero, M Moss, H Li. (Eastman Dept. Dent., Clinical University of Rochester)
In a survey of 90 new general dental patients, education was significantly correlated with mouth odor levels, college graduates being less likely to suffer from bad breath. Among the subjects, 25% of females and 41% of males had oral malodor. Females were more likely to seek professional advice and treatment than males.

Abstract 1478
Correlation between volatile sulfur levels and odorigenic bacteria in saliva. El-Halabi, G Minah, B Turng, M Zhang (University of Maryland Dental School).
Saliva specimens, collected from 30 adults with or without oral malodor were plated on selective growth media. Halimeter™ (Interscan Corp.) readings of saliva headspace were significantly correlated with total viable counts as well as volatile sulfur producing coloinies (the latter being predominanly *Veillonella* species, *Prevotella oralis*, *Fusobacterium nucleatum*, *Pepostreptococcus micros* and *Campylobacter).*

Abstract 1479
Relationship between Gram-negative anaerobes and oral malodor. EA Goulbourne, Jr, PR Leach, K Herbort, JJ Witt (Procter & Gamble, Cincinnati).
Thirty-six subjects rinsed with either quinine (control), metranidazole suspension (10%) or metranidazole solution (0.5%) for one week. Significant decreases were observed in levels of Gram-negative anaerobes and total sulfide producing bacteria on the tongue for up to 24 hours post rinse following both metranidazole rinses.

Abstract 1480
Microbiological investigation of oral malodor in young children. F Paryavigholami, G Minah, B Turng ((University of Maryland Dental School).
Children (N=10) whose parents complained of their malodor had significantly higher levels of volatile sulfide producing colonies, as compared to a control group. *Prevotella oralis* was the only specific isolate showing significantly higher levels in the children with complaint of oral malodor.

Abstract 2004
Efficacy of a chlorine dioxide-containing mouthrinse in oral malodor. F. Frascella, R Gilbert, P Fernandez, J Hendler (TKL Research, Inc., Paramus, NJ, USA)
Thirty-one subjects were treated with either chlorine dioxide-containing mouthwash (n=16) or distilled water (n=15), and tested for oral malodor by three odor judges, as well as by a portable sulfide monitor. Following two hours, significant improvements in odor pleasantness, odor intensity and VSC were observed, as compared with control ($p<0.01$). Odor reduction continued over eight hours, but statistical significance was not reported.

Abstract 2525
Oral malodour: defining the normal tongue flora. CE Kazor, JR Flowers, J Stoll, WJ Loesche (University of Michigan)
Samples were scraped from the Tongue dorsum of 46 adult volunteers and cultivated under various conditions. The most prevalent isolates recovered included *S. intermedius* , *V. parvula Actinomyces*, *Clostridium*, *Bacteroides Capnocytophaga*, *Lactobacillus* and *P. acnes*

Abstract 2526
Relationship of bacterial mats on the base of the tongue with oropharyngeal flora and excess secretions. WA Bretz, WJ Loesche, JT Murray, MA Schork (Univ. of Pittsburgh)
51 subjects, 60+ years old, were examined using FEES (fiberoptic endoscopic examination of swallowing) to determine the presence of bacterial mats on the base of the tounge and for excess in oropharyngeal secretions. The results show that if a bacterial mat was observed by FEES there was a tendency for high bacterial counts to be recoverd from throat swabs. The prsence of excess secretions was associated with the absence of a bacterial mat on the base of the tounge.

Abstract 2568
Correlation between halitosis and periodontal pathogens detected by BANA test. SL Salvador, LC Fiueriedo, E Marcantonio, Jr., RA Marcantonio, EP Rosetti (Univ. of Sao Paulo, Univ. Estadual Paulista, Brazil).
In a group of 21 selected subjects with probing depths >3mm, investigators reported a significant association ($r=0.55$; $p<0.01$) between the BANA test and volatiles sulfur compounds (VSC) as determined by the Halimeter™™ (Interscan Corp.), as well as between gingival index and VSC ($r=0.48$, $p<0.05$). In a control group of 20 subjects with probing depth <3mm, no correlations were observed.

Abstract 2598
Cysteine and methionine challenge testing to evaluate the VSC producing ability of the oral microbiota. M. Codipilly and I. Kleinberg (Oral Biology and Pathology, SUNY, Stony Brook, US) The authors describe a challenge test in which subjects rinsed with 5 mL of 6 mM cysteine solution, followed by zinc chloride. Volatile sulfur compounds were assessed by the Halimeter™ (Interscan Corp.). The cysteine challenge increased Halimeter™ readings to about 1600 ppb. The test was sensitive to inhibition by zinc ion at concentrations of 12 mM and higher.

Abstract 2799
Detection and Elimination of Oral Malodor. M.W. Hall, J. Comollo, R.P. Christensen (Clinical Research Associates, Provo, Utah, 84604, US) Researchers looked at the effect of various malodor treatments immediately after use and at three minute intervals using organoleptic and solid phase micro extraction gas chromatography. Halimeter™ (Interscan Corp.) scores were not reliable directly after mouthwash use.

Abstract 2800
Recution of oral malodor with zinc containing chewing gum. S Nachnani (UCLA School of Dentistry) The effect of zinc containing chewing gum was assessed using forty subjects assigned to four groups, who chewed one or two pieces of gum (with or without zinc) at least twice a day over a period of one week. The group chewing two pieces of active gum showed the greatest reduction in organoleptic and Halimeter™ (Interscan Corp.) scores.

Abstract 2801
Effects of metronidazole mouthrinse on tongue microbiota and oral malodour. MG Hartley, C McKenzie, J Greenman, MA El-Maaytah (UWE, Bristol, UK). Thirty-two subjects rinsed with metronidazole suspension (10%) or 0.5% quinine (control), and microbial samples plated on selective media. Reduction in gram negative anaerobes in the active group were highly significant, even up to 24 hour post-rinse. Breath odor and microbial counts (Gram-negative anaerobes) were highly significant at r squared=0.776, $p<0.005$).

Abstract 2802
A comparison of two anti-microbial containing dentifrices versus a conventional dentifrice on all day and morning breath status. JJ Witt, CL Poore (Procter & Gamble).
Thirty-three subjects brushed with stanous fluoride or triclosan/ copolymer, as compared to conventional dentifrice. The results suggest tha commercial dentifrices which contain anti-microbial agents can provide long-lasting breath protection versus a conventional dentifrice in particular.

Abstract 3271
Tea extracts suppress H^2S and Methyl mercaptans production by periodontal pathogens. CD Wu, S Tong, L Cai, WR Grigsby, L Hwang (Univ. of Illinois, Iowa and National Taiwan Univ.)
Taiwanese green and black tea extracts suppressed growth and VSC production by *Porphyromonas gingivalis* and *Fusobacterium nucleatum.*

Abstract 3500
Reduction of intrinsic oral malodor with daily use of a zinc/$NaCLO^2$ mouthwash. H Kaufman, M Codipilly, S Southworth, I Kleinberg (SUNY, Stony brook and Triumph Pharmaceuticals)
Forty-eight subjects were divided into three groups: (I) zinc/sodium chlorite mouthwash; (ii) zinc-containing OTC mouthwash; and (iii) water control. Subjects rinsed for a month and were tested at baseline, 2 and 4 weeks post rinse. The test mouthwash was significantly more effective than the others in reducing organoleptic saliva odor scores, whole mouth Halimeter™ (Interscan Corp.) scores, and saliva Eh levels.

Abstract 3517
A Self-evaluation of oral malodor and its relation to physiologic measurements. H Koriat, R Baht, I Eli (Dent. Med., Univ. of Tel Aviv).
Self assessments of bad breath in a population of 60 noncomplainers were compared with odor judge scores, Halimeter™ (Interscan Corp.) readings and body image evaluation. Self assessments generally correlated with objective parameters, as well as subject's body image perceptions.

Letters to the Editor:

• I can assure you that bad breath can be attributed to tonsilloliths because I and my sister both suffer from these and the associated bad breath. Our husbands will also tell you that this is the case. I have enlarged tonsils with many crypts which trap food particles and become rancid. Not only is there an odor associated with these but also a foul taste. I have become keenly aware when my crypts become filled with tonsilloliths (due to the sour taste) and have devised a cleaning regiment to combat this. I use cotton swabs to apply slight pressure to the tonsils and expel any matter which may be caught there. I then swabthem again with Listerine and this has helped immensely to combat the associated bad breath and sour taste. Although this isn;t a cure-all, itcertainly has helped me. I do not understand why more otolaryngologists are not aware of this problem. Comment of husband: I would agree with my wife that there is a link. I notice that her bad breath comes and goes and is directly related to whether she has done her tonsil regimen. Her teeth and gums are in excellent condition. Her dentist could verify this so I cannot think of any other cause.
Names withheld

Editor: Readers' comments on the important subject of tonsilloliths are welcome. Of particular interest is the question of to what extent do the tonsilloliths actually contribute to oral malodor (as opposed to their turning patients into halitophobics, who assume that their oral malodor is as bad as the smell of the tonsilloliths themselves).

• Can you recommend me a mouthwash or breath kit that has been clinically proven to stop bad breath.
There are too many products offered on the internet, claiming they are the best and that their product is the only one effective.
Shouldnt these products be regulated by some health law?
Thank You.
(Name withheld).

"Clearing the Air" at a Benedictine Monastery

Cheri Holland

Several patients in the dental practice where I work are monks from a Benedictine monastery on the Big Sur coastline. They live together high up a mountain looking out on the Pacific Ocean. In becoming a friend of their community beyond being their dental hygienist, I have enjoyed many trips down the coastal highway to hear them pray and sing and worship.

Last fall the Vice Prior of the monastery, Father Raniero Hoffman approached me about a problem in the community. He hoped that I might have a solution. It was concerning halitosis. The monks rise early every morning and begin singing and prayers at 5:45 a.m. They live closely together, but they pray and sing even MORE closely, says Father Raniero, and bad breath can be a real problem that affects the brothers. They strive for harmonious relationships and love according to obedience of the Scriptures, and this was something Father Raniero was determined to deal with. the monks as a group in their weekly chapter meeting about oral health and bad breath. I collated information from the internet with articles published in various magazines and professional dental journals, and had a 30 minute presentation for the monks. The last weekend in March the chapter meeting was held. The monks were all gathered in front of me in their white robes, open to being taught. This is not a regular audience. These men are very educated, astute, and thorough in all their dealings. I knew I was in great company and I hoped to present to them the subject of halitosis in a way that was enlightening and encouraging. I had a drawing on a board of a couple of molars and the basic anatomy of the gingiva, sulcus, and bony support. I included the gingival attachment as a critical site of bacterial damage leading to periodontal breakdown and the location of anaerobic bacterial action. I also drew an abbreviated profile of the head, with the sinuses, throat, tongue and basic structures where mucus is most present and vulnerable to anaerobic action. I listed the common causes and locations of origin of halitosis, the common solutions and treatment, and the possible digestive and dietary causes. I gave them a brief demonstration of proper brushing and flossing, with the intent of gentle

gingival massage and sulcular plaque removal. I suggested that early in the morning they rise a little earlier, clear out their throats, talk and sing in their cells, avoid coffee, brush their teeth and tongues, and drink water, and move around a bit. I gave them all new toothbrushes, packs of sugarless chewing gum, and a variety of tongue cleaners donated from the dental practice in which I work.

The monks' response was wonderfully positive. They had several questions following the meeting, and shared many personal situations they encounter that might be affecting their oral health. A week later, I was at the monastery for Easter vigils, and met the medical doctor that cares for them. I sent him a copy of my lecture notes for his information, so together we can bring new meaning to "fresh air" at the monastery. It was a unique experience in a unique setting. They had wanted a feminine teacher for the subject, feeling that the message would be better received and acted upon.

It seems to have worked. I hear that everyone is chewing more gum, looking for alcohol-free mouthwash, and doing all the right "morning routines" to promote freshness for prayers and meditation.

Breath Odor Research

Published several times a year by the International Society for Breath Odor Research

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Further information is available on the following web site: http://www.tau.ac.il/~melros/ Welcome.html and will shortly be available on ISBOR's own website: http://www.isbor.org

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Mel Rosenberg,
School of Dental Medicine,
Tel Aviv University,
Ramat Aviv, Tel Aviv 69978, Israel

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Vol. 2, No. 2,3 December 1998

Breath Odor Research

Official Newsletter of the International Society for Breath Odor Research (ISBOR)

"Viewed primarily as a social concern, halitosis if fast becoming recognized as a possible indicator of more serious oral, physical or even psychogenic illness"

The Oral Care Report,
Vol. 8, p. 7, 1998.

Dear colleagues,

This second newsletter of 1998 has appeared following a considerable hiatus. Part of the reason is that we were waiting for more information on the upcoming UCLA meeting. Now that this is available, we are rushing to get the newsletter out before the New Year.

As one can see above, ISBOR has a brand new logo, designed by Tali Niv-Dolinsky. The ISBOR website can now be accessed directly at

http://www.tau.ac.il/~melros/isbor.html

Please keep in mind that members of ISBOR are now linked to one another in a listserv list (breath-research@vm.tau.ac.il), and one member can e-mail all others simultaneously.

ISBOR now boasts more than one hundred members! Let's hope for a great turnout next August!

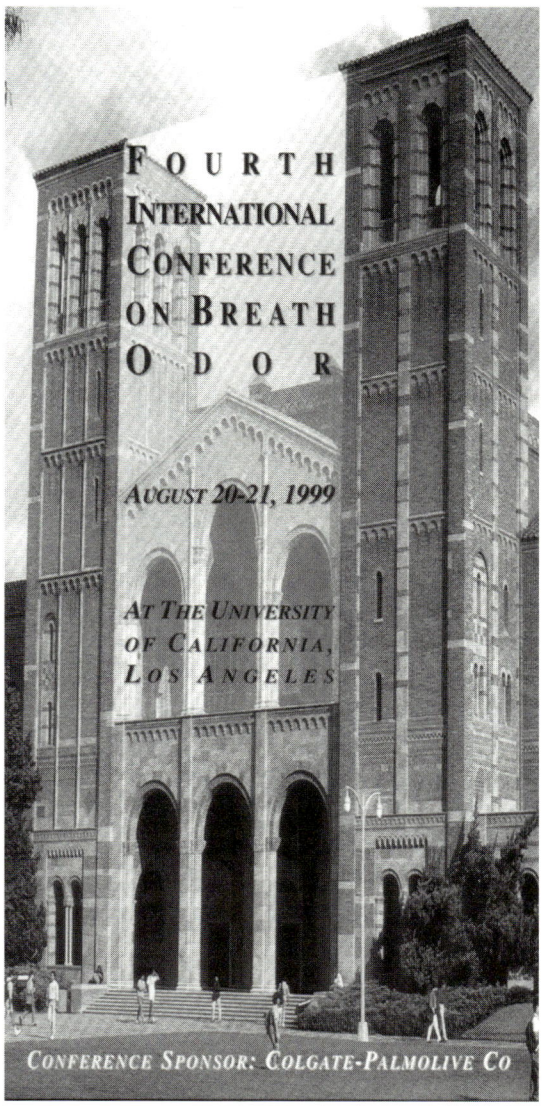
Mel Rosenberg

Editor, Breath Odor Research and Secretary-General, ISBOR

Announcing the

FOURTH INTERNATIONAL CONFERENCE ON BREATH ODOUR

Sponsored by the International Society for Breath Odor Research
August 20-21, 1999, The University of California, Los Angeles (UCLA)



Following the success of the previous conferences, The University of California, Los Angeles (UCLA) was chosen as the site for next year's meeting. This Fourth International Conference on Breath Odor will be multidisciplinary and feature several key speakers:

Walter J. Loesche (U. Michigan): "Bacteria which cause malodor in the oral cavity and nasopharynx"

Nathan Lewis (Caltech): "Conducting polymer composite sensor arrays for vapor detection and classification: an electronic nose"

Gary Beauchamp (Director, Monell): "Psychophysiologic issues in smell: new research and new directions"

Linda M. Bartoshuk (Yale): "Psychophysiologic issues in taste: new research and new directions"

Ilana Eli (Tel Aviv U.): "Psychological issues associated with breath odor"

The program will include oral presentations of accepted abstracts. Please note that the deadline for abstract submissions is March 1st, 1999. Abstracts may be submitted online at:

www.dent.ucla.edu/pic/abstract.html

ISBOR members will receive a $50 discount in registration fees, if they register prior to August 2nd, 1999.

The conference will be held on at the Sunset Village on the UCLA campus. Attractions include Westwood village situated right next to campus, Disneyland, Universal Studios, Beverly Hills, Santa Monica and of course the Pacific Ocean.

Colgate-Palmolive Co. has agreed to act as conference sponsor, and Discus Dental as a platinum sponsor.

For more details, contact UCLA Continuing Education, telephone: 310-206-8388; fax: 310-206-5281, or e-mail scotk@dent.ucla.edu. You can also visit the website at:

www.dent.ucla.edu/ce

Editorial

Past President of ISBOR

It is just one hundred years ago that Howe published the first book devoted to halitosis. The 20th century was not more interested since it took until 1995 when the first book dealing with bad breath was published by Mel Rosenberg, Ramot Publishing, Tel-Aviv University, Israel. Only one year later another followed (van Steenberghe and Rosenberg, Leuven University Press, Leaven, Belgium) and since, the number of publications indicates the steeply growing interest in different scientific disciplines.

In several countries this neglected but socially and sometimes medically very relevant problem has recently been approached by multidisciplinary clinical centres.

In Europe at the University Hospital in Leuven the first joint outpatient consultation was initiated by both the ENT and periodontology departments in 1995. Since, some 500 patients have consulted the centre where an ENT specialist and a periodontologist see the patients together while a psychologist is on call.

The advantage is that there is no time loss, as often with a sequential patient approach. Even with a multidisciplinary consultation there is always the risk that, since some 90% or more of the general adult population suffers from gingivitis, one thinks he can associate the halitosis complaint with chronic intra-oral inflammation, omitting further searches for the real cause, such as systemic or bronchopulmonary. From a semantic point of view it is therefore better to talk about breath odour than oral malodour.

We therefore feel that a standardised clinical examination, where organoleptic ratings on different occasions (the expression of halitosis is highly variable) should be done for:

- the intra-oral air
- the expired air through the nose
- the expired air through the mouth
- saliva from the anterior part of the tongue by asking the subject to lick his wrist
- coating from the posterior part of the tongue

Comparing the respective values of these five locations will allow to focalize further investigations.

A great problem is the disillusion of many patients when they hear the diagnosis and proposed therapy. While no one would refuse to undergo a gastroscopy, an approach still in use with some uninformed colleagues, they cannot believe that it is a tongue coating or cryptic tonsils that constitute the base of their halitosis. Therefore these consulations need time and should involve clinicians with the necessary empathy and tact.

Everyone realises the emotional dimension of halitosis which involves the mind. While some patients do not hesitate to reveal the mastectomy they underwent, they do not like to refer to breath malodour. We therefore have integrated the specialised halitosis consulation amidst other ENT consultations. In Europe at least, identification of such patients in a waiting room would prevent many from seeking the proper care.

On the one hand, we should rejoice that at the end of this millennium halitosis finally gets the professional attention it deserves. On the other hand the commercialism of some fresh breath centres is worrisome.

The ISBOR can, with the help of universities and other research centres, contribute to improve knowledge and define appropriate standards of care.

Prof. Daniel van Steenberghe, M.D., Ph.D.
Department of Periodontolgogy
Catholic University Leuven, Belgium

SOME RELEVANT ABSTRACTS presented at

THE 76TH ANNUAL SESSION OF THE INTERNATIONAL ASSOCIATION FOR DENTAL RESEARCH, NICE, FRANCE, JULY, 1998:

■ **Abstract # 1187.**
Therapeutic Salivary Oxidising Activity of a novel anti-bacterial ozone-generating device. D Lynch, A Baysan, CJ Silwood and M Grootveld. An ozone generating device was found to oxidize VSC compound precursor methionine in saliva to its corresponding sulphoxide. J. Dent. Res. 77:780.

■ **Abstract # 1869.**
Origin of oral malodor in periodontal disease. K Yaegaki and JM Coil. Subjects with severe periodontal disease had smaller reductions in hydrogen sulphide and methyl mercaptan following tongue coating, as compared with subjects with slight or moderate periodontal disease. The authors conclude that tongue coating is a main site of odor in slight to moderate periodontal disease, but the periodontal pocket would consitute the main site of VSC production in severe periodontal disease. J. Dent. Res. 77:865.

■ **Abstract #1937.**
Effect on oral malodor of chlrorine dioxide assessed by a hedonic panel. J Frascella, R Gilbert, P Fernandez and J Gordon. Twelve subjects were tested for oral malodor reduction following a single rinsing with a chlorine dioxide mouthwash (Retardex[tm]), as compared with distilled water, in a crossover design. There was a significant improvement following 2 and 4 hours in the experimental as opposed to the control group. J. Dent. Res. 77:874.

■ **Abstract #1940.**
Comparative antimicrobial activities of essential oil and amine/SnF_2 mouthrinses. PH Pan, L Sturdivant and ML Barnett.
An essential oil containing mouthrinse (Listerine[tm]) was more effective in killing several oral pathogens than an amine/SnF_2 mouthrinse (Meridol[tm]). J. Dent. Res. 77:874.

■ **Abstract #2125.**
Long lasting breath protection by a commercial mouthrinse. JJ Witt. A mouthwash containing cetylpyridinium chloride, CPC (Scope[tm]) was tested for antimalodor activity over time, as measured by judges and the halimeter. Whereas single phase rinsing provided significant reductions following 3 and 8 hours, cumulative rinsing led to a 24-hour reduction as well. J. Dent. Res. 77:897.

■ **Abstract #2126.**
Bad breath in children: an initial study. E Amir, R Shimonov and M Rosenberg. Twenty-four children were assessed on three different occasions for bad breath-related parameters. Whole mouth odor was significantly related to plaque levels. Both whole mouth malodor and nasal malodor were significantly related to tongue dorsum posterior odor.
J. Dent. Res. 77:897.

Nice, June, 1998

ISBOR General Meeting

The annual general meeting of ISBOR was held on Friday June 26th, 1998 at the IADR (International Association for Dental Research) meeting in Nice, France. One of the major topics was the upcoming 4th international conference. Sushma Nachnani, representing the organizing committee, followed the progression of the meetings from their modest beginnings (40 participants in Herzliya, Israel, 1993), via Leuven, Belgium (140 participants, 1995), through Vancouver (180 participants, 1997), with hopes to have the biggest and best meeting next year, with as many as 500 participants. At the general meeting, the finances of ISBOR were presented and ratified by the meeting. In addition, it was decided to reduce membership fees to $100 for two consecutive years. Finally, participants decided that ISBOR should attempt to fill a more proactive role in helping dental organizations to set up guidelines, for example regarding substantiation of claims of oral malodor reduction. The next general meeting will be held at the conference at UCLA next August.

Letters to the Editor

Editor:

Another source of bad breath that the public should be made aware of is the existence of partially erupted wisdom teeth. Dentists often overlook the need for early removal of partially erupted wisdom teeth. A patient will often ignore their advice in most cases by saying: "They are not bothering me at present! - why should I have them out?" Partially erupted wisdom teeth often have deep pockets around them and continually exude small amounts of pus. In other words these teeth act as a nidus of infection. Despite good oral hygiene, patients with such teeth can not hope to solve their problem of bad breath until these teeth are extracted.

Yours sincerely,
Dr John K. Flynn B.D.Sc.
(Belmont Western Australia)

Editor:

I would like to share with you how I was able to resolve a bad breath problem my girlfriend had. I was afraid to tell her. I used a several step process.

1. I started brushing my teeth at her house and asked her to save my own brush and tooth paste. I bought her a tooth brush to use it at my apartment too.
2. We started using dental floss. As soon as I got to her place after work, I would do my oral hygiene. We did the same when we got to my place. We did not care if we had eaten food or not.
3. We then started using mouthwash to rinse and gargle.
4. Then we started brushing the tongue as far back possible.
5. At last, I bought for her a tongue scraper and asked her to read all the directions before using it. At this point, she ask me if she had bad breath. I told her that she had this problem but, it was a LOT better since we started doing all of the above.

It took me about 5 weeks to do these steps (one each week) and also helped me to build courage to tell her about the bad breath problem. Her problem was reduced about 80% by doing all of these steps. It is VERY rare she has bad breath these days.

Just one advice for everyone about telling her/his companion about a bad breath problem. My girlfriend is VERY grateful to me because I told her about it. She felt bad only for a few days. She now feels more happy, sexy, confident and really appreciates me a lot. We both learn a lot about the importance of Oral Hygiene too.

Another simple advice, to be able to brush the tongue we bought "the smallest soft baby brushes" we found. With these tiny brushes we reach far far behind of the tongue. Now we have and use two brushes.

Please feel free to use this information if you consider it proper. It is my small contribution for all the people that have this problem. Since we are healthy people, educated and from well-off families we have learned that this problem can "attack" anyone. If there is any way I can help please let me know.

Sincerely,
N.R.P.
Lima, Peru

Breath Odor Research
Published by the International Society for Breath Odor Research
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Vol. 4, No.1 February 2000

Breath Odor Research

Official Newsletter of the International Society for Breath Odor Research (ISBOR)

Dear Colleagues,

The Fourth International Conference on Breath Odor (August 20-21,1999) was a great success. From a scientific viewpoint, it surpassed our previous meetings, featuring over 50 presentations. From a social viewpoint, UCLA and the surroundings provided a perfect venue to over 250 participants. Thanks to Mike Newman and the organizing committee who did a splendid job (special thanks are due to Perry Krokevold for outstanding work on the abstracts and scientific content, to Sushma Nachnani for her organizational skills and to Fariba Younai for her help throughout the meeting). Kudos to Dr. William Yancey and his team at the Continuing Education Department for the preparation of the abstract book and all the technical support. In a word, a job well done. At the general meeting, ISBOR decided to hold its next international conference (2001) in Japan and the sixth conference in Tel Aviv (2003).

Our next general meeting will be during the general session of the IADR in Washington, April 1-4, 1999. A notice to our members will be sent out.

To those readers of our newsletter who are not ISBOR members, please take a moment and fill out the application on the back page. ISBOR is solely dedicated to promote research on breath odors and to disseminate scientific information on bad breath throughout the world. We publish newsletters, organize meetings, and will soon have our own website (www.isbor.org) which will contain an extensive bibliography of papers dealing with bad breath research.

To all our members and readers, may the coming year be one of health, happiness, betterment and better smells.

Mel Rosenberg
Editor, Breath Odor Research and
Secretary-General, ISBOR

The Fourth International Conference on Breath Odor

SUMMARY OF ABSTRACTS presented at

THE 1999 IADR MEETING (VANCOUVER)

Abstract 1149
Factors influencing mouthwash rinsing time. J Stephens, CA Munoz, J Kettering, M Hoffer, N Melendy, T Windemuth (Loma Linda, CA, USA)
Data collected in the study suggest that mouthrinse users rinse for approximately half the time suggested by manufacturers, with mean times ranging from 9.6 to 16 seconds. Burning sensation and the subject's feeling they had rinsed long enough were the most common reasons for expectoration.

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Abstract 1478
Correlation between volatile sulfur levels and odorigenic bacteria in saliva. El-Halabi, G Minah, B Turng, M Zhang (University of Maryland Dental School).
Saliva specimens, collected from 30 adults with or without oral malodor were plated on selective growth media. Halimeter™ (Interscan Corp.) readings of saliva headspace were significantly correlated with total viable counts as well as volatile sulfur producing coloinies (the latter being predominanly *Veillonella* species, *Prevotella oralis*, *Fusobacterium nucleatum*, *Pepostreptococcus micros* and *Campylobacter).*

Abstract 1479
Relationship between Gram-negative anaerobes and oral malodor. EA Goulbourne, Jr, PR Leach, K Herbort, JJ Witt (Procter & Gamble, Cincinnati).
Thirty-six subjects rinsed with either quinine (control), metranidazole suspension (10%) or metranidazole solution (0.5%) for one week. Significant decreases were observed in levels of Gram-negative anaerobes and total sulfide producing bacteria on the tongue for up to 24 hours post rinse following both metranidazole rinses.

Abstract 1480
Microbiological investigation of oral malodor in young children. F Paryavigholami, G Minah, B Turng ((University of Maryland Dental School).
Children (N=10) whose parents complained of their malodor had significantly higher levels of volatile sulfide producing colonies, as compared to a control group. *Prevotella oralis* was the only specific isolate showing significantly higher levels in the children with complaint of oral malodor.

Abstract 2004
Efficacy of a chlorine dioxide-containing mouthrinse in oral malodor. F. Frascella, R Gilbert, P Fernandez, J Hendler (TKL Research, Inc., Paramus, NJ, USA)
Thirty-one subjects were treated with either chlorine dioxide-containing mouthwash (n=16) or distilled water (n=15), and tested for oral malodor by three odor judges, as well as by a portable sulfide monitor. Following two hours, significant improvements in odor pleasantness, odor intensity and VSC were observed, as compared with control ($p<0.01$). Odor reduction continued over eight hours, but statistical significance was not reported.

Abstract 2525
Oral malodour: defining the normal tongue flora. CE Kazor, JR Flowers, J Stoll, WJ Loesche (University of Michigan)
Samples were scraped from the Tongue dorsum of 46 adult volunteers and cultivated under various conditions. The most prevalent isolates recovered included *S. intermedius , V. parvula Actinomyces, Clostridium, Bacteroides Capnocytophaga, Lactobacillus* and *P. acnes*

Abstract 2526
Relationship of bacterial mats on the base of the tongue with oropharyngeal flora and excess secretions. WA Bretz, WJ Loesche, JT Murray, MA Schork (Univ. of Pittsburgh)
51 subjects, 60+ years old, were examined using FEES (fiberoptic endoscopic examination of swallowing) to determine the presence of bacterial mats on the base of the tounge and for excess in oropharyngeal secretions. The results show that if a bacterial mat was observed by FEES there was a tendency for high bacterial counts to be recoverd from throat swabs. The prsence of excess secretions was associated with the absence of a bacterial mat on the base of the tounge.

Abstract 2568
Correlation between halitosis and periodontal pathogens detected by BANA test. SL Salvador, LC Fiueriedo, E Marcantonio, Jr., RA Marcantonio, EP Rosetti (Univ. of Sao Paulo, Univ. Estadual Paulista, Brazil).
In a group of 21 selected subjects with probing depths >3mm, investigators reported a significant association ($r=0.55$; $p<0.01$) between the BANA test and volatiles sulfur compounds (VSC) as determined by the Halimeter™™ (Interscan Corp.), as well as between gingival index and VSC ($r=0.48$, $p<0.05$). In a control group of 20 subjects with probing depth <3mm, no correlations were observed.

Abstract 2598
Cysteine and methionine challenge testing to evaluate the VSC producing ability of the oral microbiota. M. Codipilly and I. Kleinberg (Oral Biology and Pathology, SUNY, Stony Brook, US) The authors describe a challenge test in which subjects rinsed with 5 mL of 6 mM cysteine solution, followed by zinc chloride. Volatile sulfur compounds were assessed by the Halimeter™ (Interscan Corp.). The cysteine challenge increased Halimeter™ readings to about 1600 ppb. The test was sensitive to inhibition by zinc ion at concentrations of 12 mM and higher.

Abstract 2799
Detection and Elimination of Oral Malodor. M.W. Hall, J. Comollo, R.P. Christensen (Clinical Research Associates, Provo, Utah, 84604, US) Researchers looked at the effect of various malodor treatments immediately after use and at three minute intervals using organoleptic and solid phase micro extraction gas chromatography. Halimeter™ (Interscan Corp.) scores were not reliable directly after mouthwash use.

Abstract 2800
Recution of oral malodor with zinc containing chewing gum. S Nachnani (UCLA School of Dentistry) The effect of zinc containing chewing gum was assessed using forty subjects assigned to four groups, who chewed one or two pieces of gum (with or without zinc) at least twice a day over a period of one week. The group chewing two pieces of active gum showed the greatest reduction in organoleptic and Halimeter™ (Interscan Corp.) scores.

Abstract 2801
Effects of metronidazole mouthrinse on tongue microbiota and oral malodour. MG Hartley, C McKenzie, J Greenman, MA El-Maaytah (UWE, Bristol, UK). Thirty-two subjects rinsed with metronidazole suspension (10%) or 0.5% quinine (control), and microbial samples plated on selective media. Reduction in gram negative anaerobes in the active group were highly significant, even up to 24 hour post-rinse. Breath odor and microbial counts (Gram-negative anaerobes) were highly significant at r squared=0.776, $p<0.005$).

Abstract 2802
A comparison of two anti-microbial containing dentifrices versus a conventional dentifrice on all day and morning breath status. JJ Witt, CL Poore (Procter & Gamble).
Thirty-three subjects brushed with stanous fluoride or triclosan/ copolymer, as compared to conventional dentifrice. The results suggest tha commercial dentifrices which contain anti-microbial agents can provide long-lasting breath protection versus a conventional dentifrice in particular.

Abstract 3271
Tea extracts suppress H^2S and Methyl mercaptans production by periodontal pathogens. CD Wu, S Tong, L Cai, WR Grigsby, L Hwang (Univ. of Illinois, Iowa and National Taiwan Univ.) Taiwanese green and black tea extracts suppressed growth and VSC production by *Porphyromonas gingivalis* and *Fusobacterium nucleatum.*

Abstract 3500
Reduction of intrinsic oral malodor with daily use of a zinc/$NaCLO^2$ mouthwash. H Kaufman, M Codipilly, S Southworth, I Kleinberg (SUNY, Stony brook and Triumph Pharmaceuticals) Forty-eight subjects were divided into three groups: (I) zinc/sodium chlorite mouthwash; (ii) zinc-containing OTC mouthwash; and (iii) water control. Subjects rinsed for a month and were tested at baseline, 2 and 4 weeks post rinse. The test mouthwash was significantly more effective than the others in reducing organoleptic saliva odor scores, whole mouth Halimeter™ (Interscan Corp.) scores, and saliva Eh levels.

Abstract 3517
A Self-evaluation of oral malodor and its relation to physiologic measurements. H Koriat, R Baht, I Eli (Dent. Med., Univ. of Tel Aviv).
Self assessments of bad breath in a population of 60 noncomplainers were compared with odor judge scores, Halimeter™ (Interscan Corp.) readings and body image evaluation. Self assessments generally correlated with objective parameters, as well as subject's body image perceptions.

Letters to the Editor:

• I can assure you that bad breath can be attributed to tonsilloliths because I and my sister both suffer from these and the associated bad breath. Our husbands will also tell you that this is the case. I have enlarged tonsils with many crypts which trap food particles and become rancid. Not only is there an odor associated with these but also a foul taste. I have become keenly aware when my crypts become filled with tonsilloliths (due to the sour taste) and have devised a cleaning regiment to combat this. I use cotton swabs to apply slight pressure to the tonsils and expel any matter which may be caught there. I then swabthem again with Listerine and this has helped immensely to combat the associated bad breath and sour taste. Although this isn;t a cure-all, itcertainly has helped me. I do not understand why more otolaryngologists are not aware of this problem. Comment of husband: I would agree with my wife that there is a link. I notice that her bad breath comes and goes and is directly related to whether she has done her tonsil regimen. Her teeth and gums are in excellent condition. Her dentist could verify this so I cannot think of any other cause.
Names withheld

Editor: Readers' comments on the important subject of tonsilloliths are welcome. Of particular interest is the question of to what extent do the tonsilloliths actually contribute to oral malodor (as opposed to their turning patients into halitophobics, who assume that their oral malodor is as bad as the smell of the tonsilloliths themselves).

• Can you recommend me a mouthwash or breath kit that has been clinically proven to stop bad breath.
There are too many products offered on the internet, claiming they are the best and that their product is the only one effective.
Shouldnt these products be regulated by some health law?
Thank You.
(Name withheld).

"Clearing the Air" at a Benedictine Monastery

Cheri Holland

Several patients in the dental practice where I work are monks from a Benedictine monastery on the Big Sur coastline. They live together high up a mountain looking out on the Pacific Ocean. In becoming a friend of their community beyond being their dental hygienist, I have enjoyed many trips down the coastal highway to hear them pray and sing and worship.

Last fall the Vice Prior of the monastery, Father Raniero Hoffman approached me about a problem in the community. He hoped that I might have a solution. It was concerning halitosis. The monks rise early every morning and begin singing and prayers at 5:45 a.m. They live closely together, but they pray and sing even MORE closely, says Father Raniero, and bad breath can be a real problem that affects the brothers. They strive for harmonious relationships and love according to obedience of the Scriptures, and this was something Father Raniero was determined to deal with. the monks as a group in their weekly chapter meeting about oral health and bad breath. I collated information from the internet with articles published in various magazines and professional dental journals, and had a 30 minute presentation for the monks. The last weekend in March the chapter meeting was held. The monks were all gathered in front of me in their white robes, open to being taught. This is not a regular audience. These men are very educated, astute, and thorough in all their dealings. I knew I was in great company and I hoped to present to them the subject of halitosis in a way that was enlightening and encouraging. I had a drawing on a board of a couple of molars and the basic anatomy of the gingiva, sulcus, and bony support. I included the gingival attachment as a critical site of bacterial damage leading to periodontal breakdown and the location of anaerobic bacterial action. I also drew an abbreviated profile of the head, with the sinuses, throat, tongue and basic structures where mucus is most present and vulnerable to anaerobic action. I listed the common causes and locations of origin of halitosis, the common solutions and treatment, and the possible digestive and dietary causes. I gave them a brief demonstration of proper brushing and flossing, with the intent of gentle

gingival massage and sulcular plaque removal. I suggested that early in the morning they rise a little earlier, clear out their throats, talk and sing in their cells, avoid coffee, brush their teeth and tongues, and drink water, and move around a bit. I gave them all new toothbrushes, packs of sugarless chewing gum, and a variety of tongue cleaners donated from the dental practice in which I work.

The monks' response was wonderfully positive. They had several questions following the meeting, and shared many personal situations they encounter that might be affecting their oral health. A week later, I was at the monastery for Easter vigils, and met the medical doctor that cares for them. I sent him a copy of my lecture notes for his information, so together we can bring new meaning to "fresh air" at the monastery. It was a unique experience in a unique setting. They had wanted a feminine teacher for the subject, feeling that the message would be better received and acted upon.

It seems to have worked. I hear that everyone is chewing more gum, looking for alcohol-free mouthwash, and doing all the right "morning routines" to promote freshness for prayers and meditation.

Breath Odor Research
Published several times a year by the International Society for Breath Odor Research
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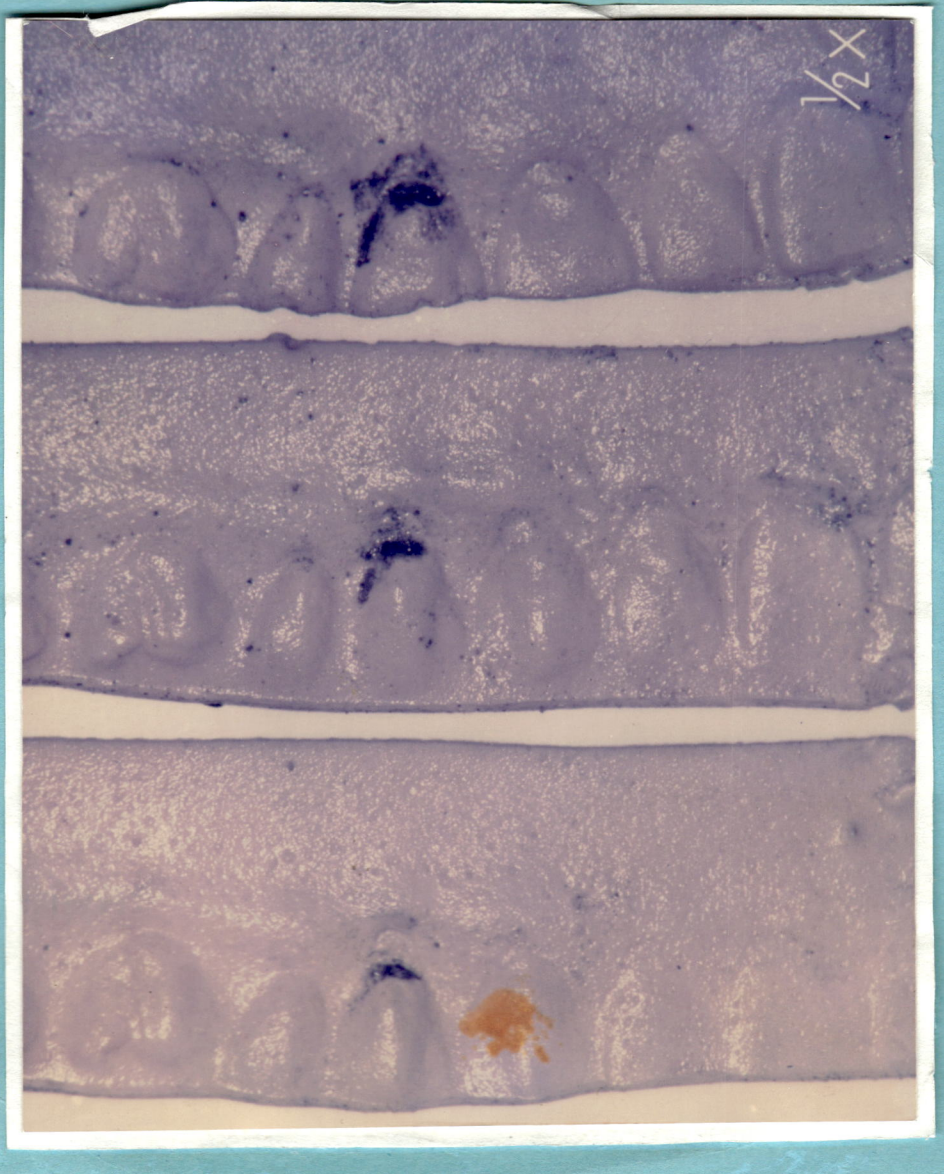
1987

Early Detection of

Dental Caries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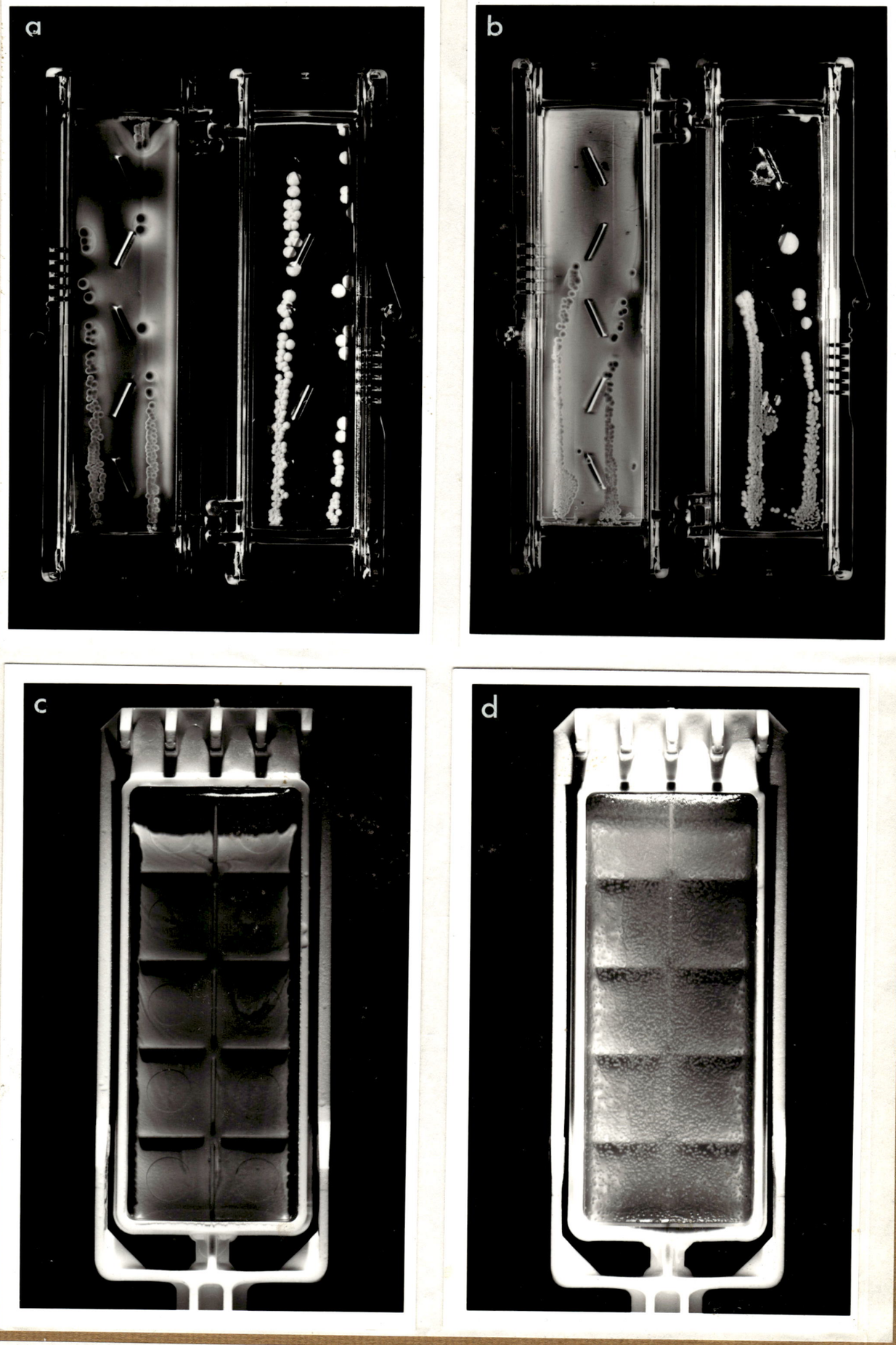

Fig. 5: Effect of antibiotic on growth on Diaslide vs. dipslide.

A suspension of E. coli (10^6 cfu/mL) gave comparable results on Diaslides whether or not ampicillin was present (a and b, respectively). In contrast, no growth was observed on the dipslide which was immersed into antibiotic-containing urine (c), as opposed to the control dipslide which was dipped into the same suspension, without added antibiotic (d).

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תודה שהשתתפתם בתכניתנו. אנו מקווים שזו היתה חוויה נעימה ומעשירה

הקטע שבו השתתפתם ישודר

בתאריך 22.4.04 יום חמישי שעה 14:15 ערוץ 1

ייתכן שהקטע ישודר גם בשידורים חוזרים. ערוץ 23 15:45

כיוון שהתכנית משודרת כתכנית רצף, זמן שידורה אינו תמיד לפי המתוכנן.
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בברכה

צוות ההפקה "בחדר של חני"

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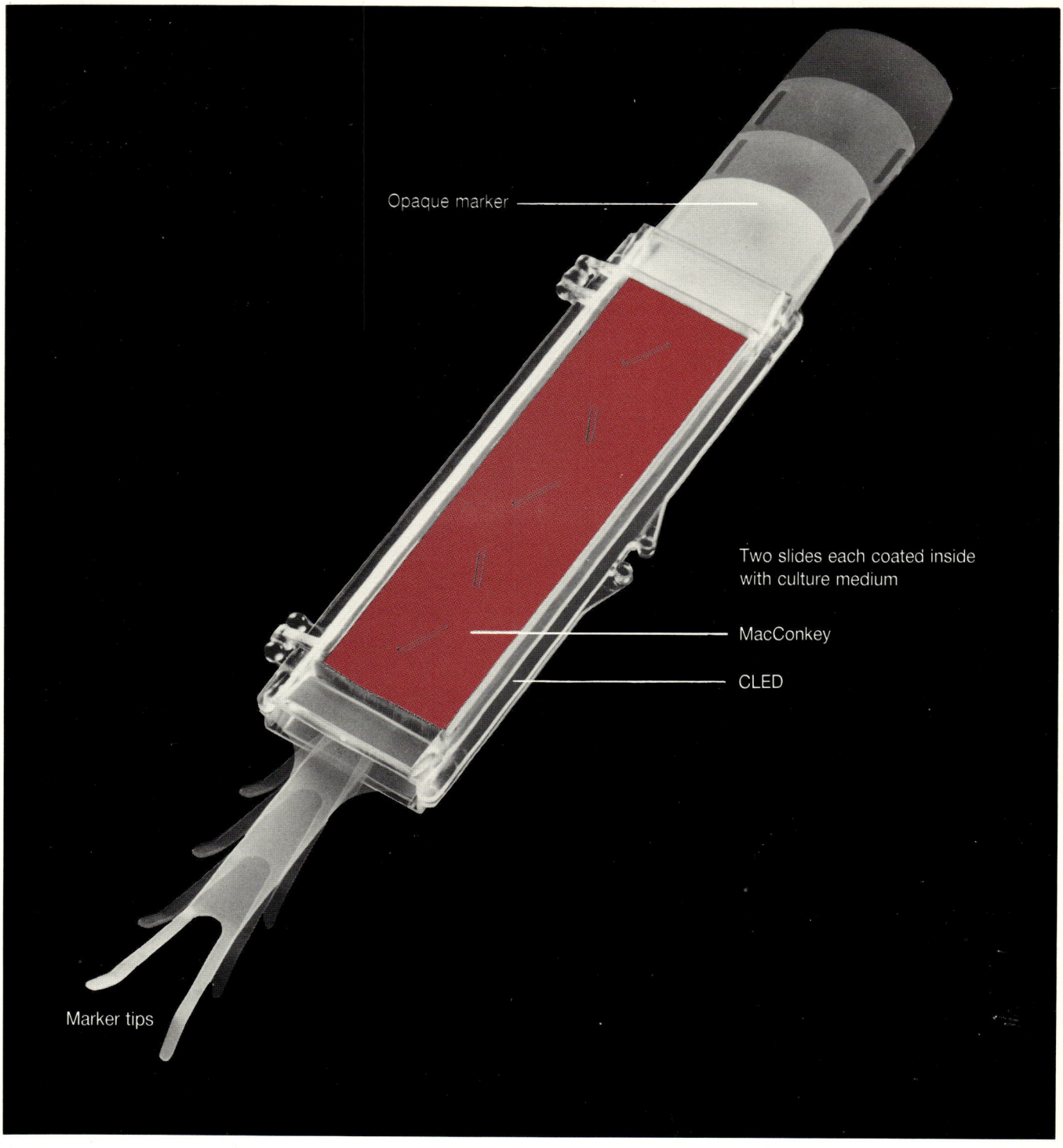
The new marker in UTI detection



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- *Saves time and accelerates diagnosis*
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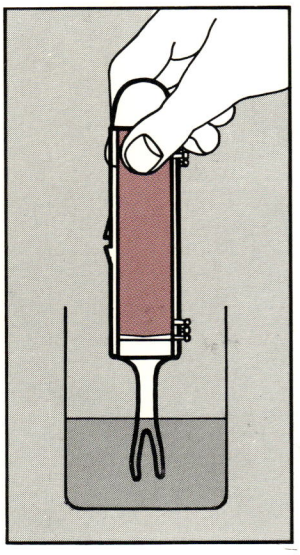
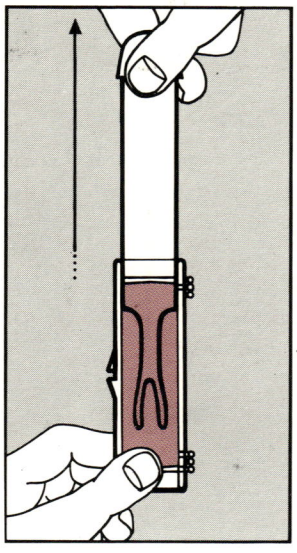
DIASLIDE – as easy to use as a book mark

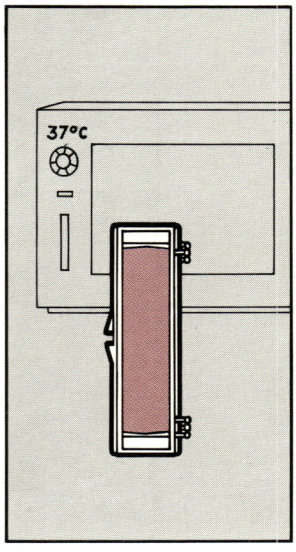


Dip marker tips into freshly voided urine (no need to drain).

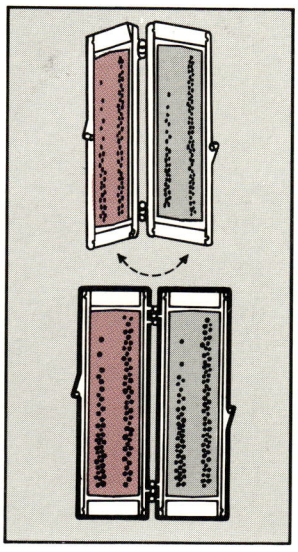


Hold device vertically, using other hand to draw up opaque marker. Then discard it.

Transparent plates coated with media are streaked with urine sample from marker tips.



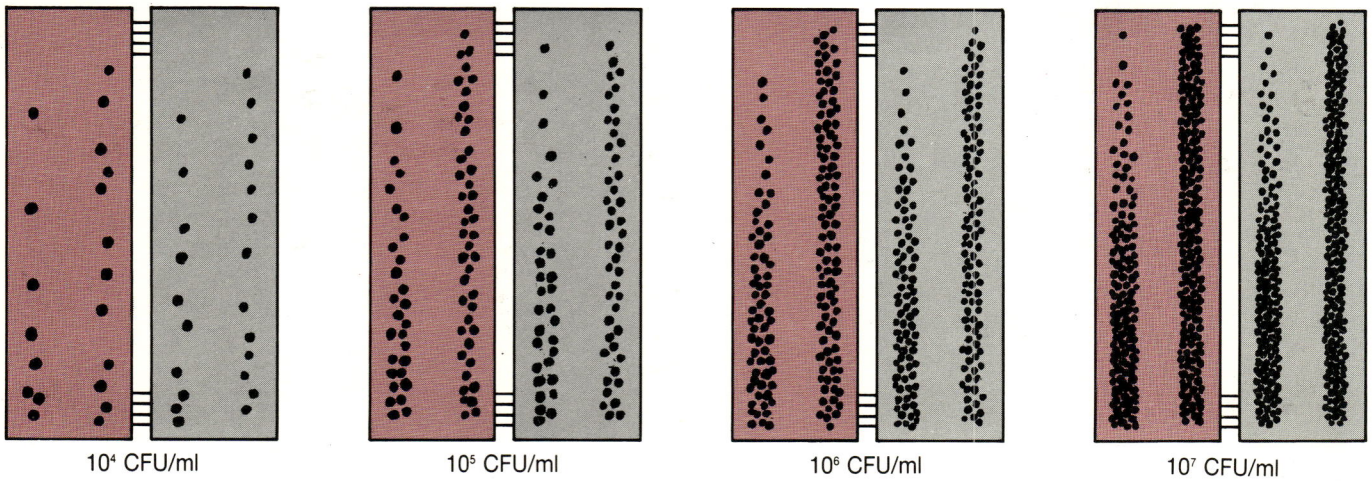
Incubate for 18–24 hours at 37°C, in normal way.



Culture appears as tracks, created by streaking action. Interpret against reference chart.

Two marker tips, each designed to streak both media, one with uniform track and the other with graded track; from high concentration to single isolated colonies

Examples of Results (E. Coli)



10^4 CFU/ml | 10^5 CFU/ml | 10^6 CFU/ml | 10^7 CFU/ml

- *Transparent device reveals culture growth*
- *Unique dilution effect highly efficient in presenting confluent growths as isolated colonies*
- *Design permits opening if further testing necessary*

U.S. Patent
Other Patents Pending

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ニュータイプのYフィンガーで操作が簡単

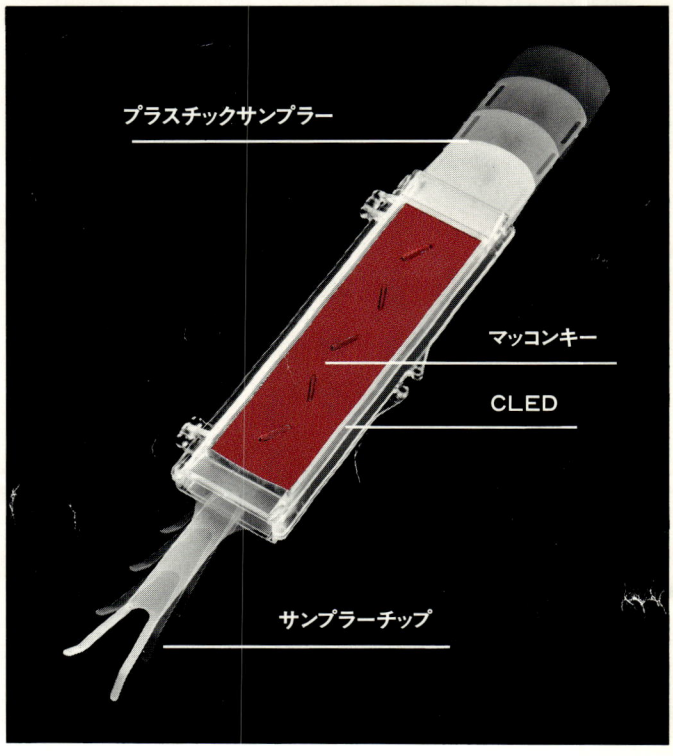
尿中細菌簡易定量・鑑別用培地

ダイアスライド「ニッスイ」

ダイアスライド「ニッスイ」は、尿中細菌数測定法として、従来のdip-slide法による問題点を解決し、さらに使いやすさ、性能面で独自の特長を数多く備えた新しいタイプの培地です。

内　容

ダイアスライド「ニッスイ」は、本体の内側に向かい合ってコートされた２種類の培地からなっており、その間にプラスチックサンプラーが挟まれています。プラスチックサンプラーの先端にある２本の曲がったサンプラーチップ（Y字形）を尿中に浸した後、引き上げるだけで２種類の培地面に同時に尿を塗布することができます。



●CLED寒天培地

グラム陽性菌、グラム陰性菌の発育に適した培地で、集落の形態と色調の変化から、ある程度菌種の鑑別ができます。

●マッコンキー寒天培地

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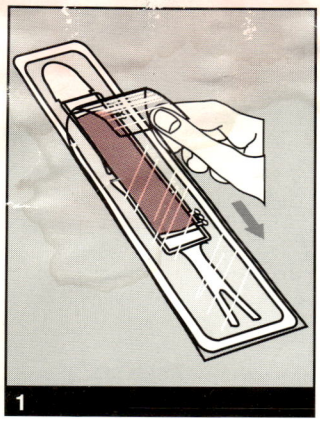
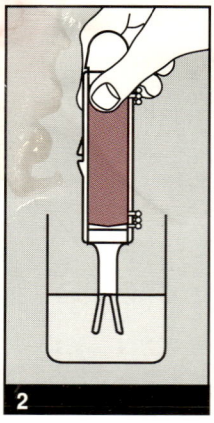


ラップをはがし、サンプラーチップ部に触れないように注意しながらケースから取り出します。



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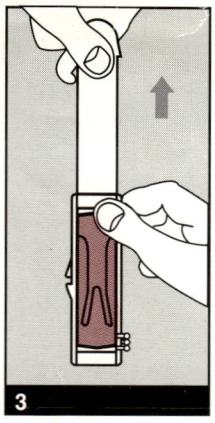
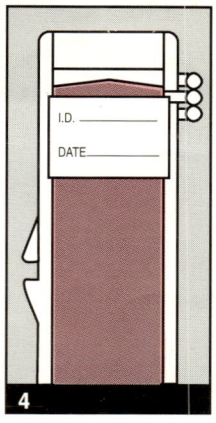


本体を垂直に持ち、もう一方の手でプラスチックサンプラーの上端をつかみ、まっすぐに引き上げて本体の上部から引き抜きます。



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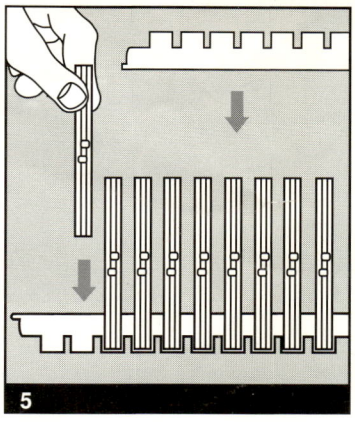


本品のケース２個を培養用のトレーとして使用します。本体をトレーにしっかりと押し込み、もう一つのトレーをかぶせて固定します。２個のトレーで10枚のダイアスライドが立てられます。37℃で18～24時間培養します。

判定法

培養終了後、集落の発育の有無を調べます。陰性の場合は培地を開けなくても判定できます。集落の発育を認めたら本体を開き、CLED寒天培地の発育状態をCLED発育例と比較（マッコンキー寒天培地の方がCLED寒天培地よりも集落数が多いときはマッコンキー寒天培地の発育状態をマッコンキー発育例と比較）し、尿1ml中の細菌数とします。マッコンキー寒天培地での細菌数はグラム陰性の細菌数を表します。

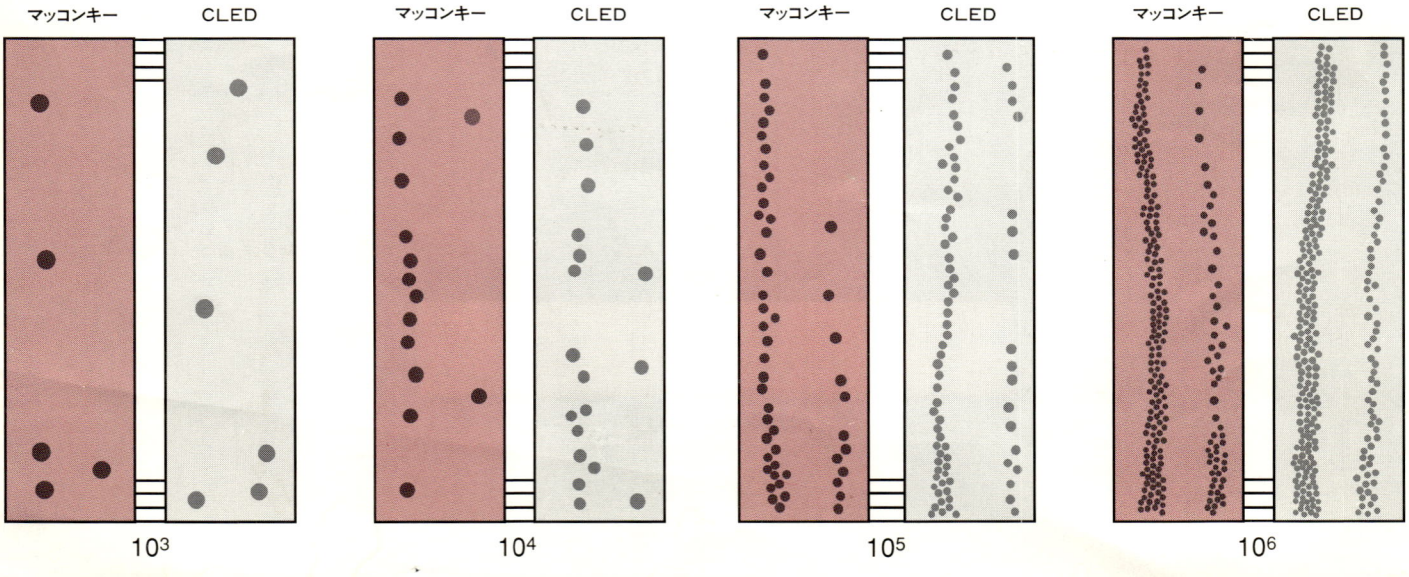
一般に10^3CFU/ml以下のときを陰性とし、10^5CFU/ml以上を細菌尿とします。10^4CFU/mlのときは新鮮尿で再検査します。

主な尿路感染症原因菌の、CLED寒天培地およびマッコンキー寒天培地上の集落の性状と色調の例を下記に示します。

	CLED寒天培地	マッコンキー寒天培地
E.coli	中央がやや暗い黄色	ピンク赤
K.pneumoniae	粘性のある黄色	ピンク赤
P.aeruginosa	鈍い青緑色	透明
P.vulgaris	明るい青緑色	透明
S.aureus	暗い黄色	発育しない
S.epidermidis	白色か淡黄色	発育しない
E.faecalis	黄色	発育しない

これら以外の菌種でも同様な性状を示すことがありますので、最終的な菌種の決定は同定して行って下さい。

発育例



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רופא יקר,

אנו שמחים להציג בפניך תכשיר מהפכני העשוי להביא תועלת רבה ללקוחותיך הסובלים מריח רע מהפה.

ASSUTA הוא תכשיר חדש של מי פה דו–שכבתיים על בסיס שמן ומים, שפותח לאחר עשר שנות מחקר אוניברסיטאי. התכשיר מיועד להסרה יעילה של חיידקים מחלל הפה ומבטיח מניעת ריח רע לאורך זמן. יעילות פעולתו של התכשיר, ניתנת להמחשה מיידית הן באמצעות האף והן ממראה עיניים.

הגורמים העיקריים להליטוזיס:

ריח רע מהפה נגרם על ידי תרכובות נדיפות המכילות גופרית, volatile sulfur compounds. תרכובות אלה הן תוצר של חיידקים החבויים בגומחות שונות בחלל הפה כגון כיסי החניכיים, גב הלשון ובין השיניים. תנאים נוספים להתפתחות ריחות רעים ודוחים מהפה הם התייבשות בפה, כלומר ירידה בזרימת הרוק, למשל בזמן השינה, וכן תהליכי דלקת פעילים ברקמות החניכיים.

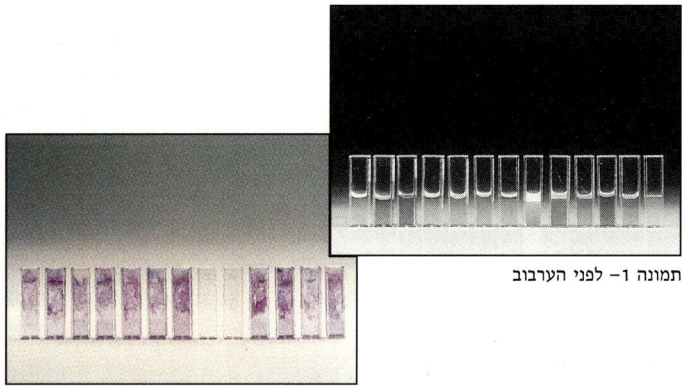
פעולתם החלקית של מי הפה הקיימים בשוק:

פעילותם של מי הפה המסחריים הקיימים בשוק, מבוססת בעיקר על אפקט מיסוך המשולב בפעילות אנטי בקטריאלית מסוימת המביאה בדרך כלל להקלה לזמן קצר בלבד (פחות משעתיים)

יתרונות מי פה ASSUTA:

לעומת מי הפה הוותיקים, נועד השימוש ב ASSUTA למנוע ריח רע מהפה לאורך זמן (מעל 8 שעות). יתרון זה מתאפשר הודות להרכב הדו–שכבתי הייחודי של התכשיר. לטיפות השמן הזעירות, הנוצרות בעקבות ניעור האריזה, יכולת מוגברת לספוח אליהם חיידקים ו – DEBRIS ולהרחיק אותם מחלל מהפה בתום פעולת השטיפה. התכשיר מכיל גם פלואוריד (SODIUM MONOFLUOROPHOSPHATE) למניעת עששת וכן חומרים אנטי בקטריאלים, הן בשכבה המימית (C.P.C.) והן בשכבת השמן (שמנים אתריים). פעולתו של התכשיר מומחשת למשתמש גם באופן ויזואלי והטעם הרענן שמשאיר התכשיר נמשך זמן רב ללא צריבה אלכוהלית וללא תחושה שמנונית.

הסרת שכבת החיידקים על ידי פורמולציות דו–שכבתיות.



תמונה 1– לפני הערבוב

תמונה 2– לאחר השטיפה

בהשוואה למי פה מסחריים מובילים, יש לפורמולציות שמן–מים (מיכלי פלסטיק 4 ו– 5 מימין) יכולת מוגברת להסיר חיידקים ממשטחים.
תמונה 1– מי פה שונים לפני הערבוב. תמונה 2– מיכלי הפלסטיק שנצבעו לאחר השטיפה בתכשירים אלה.
הצבע שנותר, ממחיש את שכבת החיידקים שנותרה לאחר פעולתם החלקית של התכשירים הקיימים.
לעומת זאת, במיכלים שנשטפו בפורמולציות שמן–מים (מיכלים 4 ו– 5 מימין)– הוסר הרובד כמעט לחלוטין.

סימוכין מדעיים:

בשנת 1982, דיווחו החוקרים וייס וחבריו כי אחוז גבוה של חיידקים שבודדו מהפה, נצמדו לפחממן נוזלי (n-HEXADECANE). שנה לאחר מכן הראו רוזנברג וחבריו שתרחיפי חיידקים שהתקבלו ישירות מרובד דנטלי, נצמדו ביעילות גבוהה לפחממנים נוזליים. תצפיות ראשוניות אלה הובילו לרעיון של שימוש במי פה דו–שכבתיים המורכבים משמן ומים להסרת מיקואורגניזמים מהפה. מחקרים נוספים הראו שמיגוון רחב של זנים מעבדתיים של חיידקים נצמדים בזיקה גבוהה לפחממנים, וכן שמיקואורגניזמים הנצמדים לפחממנים נצמדים גם לשמנים המותרים לשימוש בפה. נמצא גם כי שילובים של מים ושמן הסירו יותר מ– 97% מחיידקי A CALCOACETICUS RAG-1, שציפו מיכלי פלסטיק פוליסטרין. (ראה תמונות 1, 2). פורמולציות ראשוניות של מי פה שמן–מים, הרחיקו בין 98% – 92% מציפוי החיידקים בהשוואה לשאר התכשירים המצויים בשוק שהסירו בין 50% – 15% בלבד. שני מחקרים השוואתים שפורסמו לאחרונה, הראו כי מי–פה דו–שכבתיים כדוגמת ASSUTA יעילים פי שניים ויותר מבחינת זמן השפעתם, אחוזי הקטנת עוצמת הריח וירידה במספר החיידקים.

המהפכה המדעית בהגיינת הפה

ASSUTA

תמיסה דנטלית למניעת ריח פה למשך שעות ארוכות

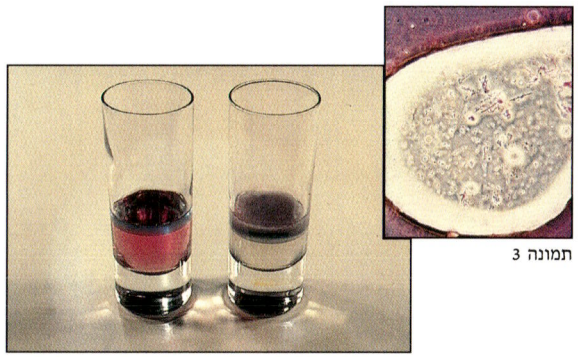
חדש!

סוד
מוצרי טיפוח וניקיון

■ רואים את ההוכחות בעיניים:

בנוסף לאף האנושי, מאפשרים מי פה ASSUTA צפייה מוחשית ביעילות התכשיר. הפאזה המימית מכילה צבע מאכל הצובע חיידקים ושאריות תאים. לאחר השטיפה ניתן לאסוף את האמולסיה לכוס זכוכית או מבחנה. כעבור מספר דקות נפרדות הפאזות והחיידקים ושאריות המזון שנצבעו באדום, נצמדים לטיפות השמן שבשכבה העליונה (ראה תמונות 3 ו– 4). השכבה המימית התחתונה מאבדת את ציבעה האדום ועימה את מחוללי הריח הרע.

■ המחשת פעולתו היעילה של תכשיר ASSUTA:



תמונה 3

תמונה 4

בתמונה 4 ניתן לראות את מי פה ASSUTA לפני השימוש, (כוס שמאלית) ולאחר השימוש (כוס ימנית). ניתן לראות כיצד טיפות השמן ספחו אליהן חיידקים, תאי אפיתל מקולפים ושאריות מזון שנצבעו אדום באמצעות צבע מאכל. כתוצאה מספיחת החיידקים, נותרה השכבה התחתונה חסרת צבע. בחינה מיקרוסקופית של טיפות השמן (תמונה 3) מגלה מאות חיידקים שהוסרו מהפה, על גבי טיפת שמן אחת.

■ אופן השימוש המומלץ:

להשגת תוצאות אופטימליות, יש לנער היטב את הבקבוק לפני כל שימוש ולגרגר בחוזקה פעמיים, 30 שניות בכל פעם. אין לאכול או לשתות חצי שעה לפחות מתום השימוש.

כיתר התכשירים לשטיפת פה, אין להתיר לילדים מתחת גיל 9 להשתמש בתכשיר, שכן הם עלולים לבלוע את הנוזל.

לקבלת פרטים נוספים פנה אל:

שמן תעשיות בע"מ חטיבת סוד – מוצרי טיפוח ונקיון
ת.ד. 136 רח' ע. טובים 2, חיפה או בטלפון : 03-5758582
בין השעות 16:00–18:00 בימים א'–ה'.

סוד
מוצרי טיפוח וניקיון

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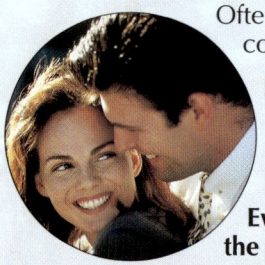
BAD BREATH...

Bad breath is more common than you think. In fact, it affects most of us at some time or another and a high proportion of people have a persistent problem.



Often referred to as oral malodour, bad breath ranges in severity from common 'morning breath', from which most of us suffer, to halitosis.

Bad breath can have a severe impact on our lives, affecting us at work and in social situations. The worst thing is that many of us are not even aware that we are sufferers as self-detection is very difficult.

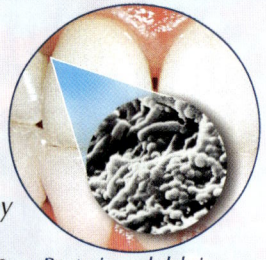
Even if you do not think you have bad breath - wouldn't you like the confidence of knowing that you have fresh breath - all the time?

There is a lot of confusion surrounding the causes of bad breath and the most effective ways of controlling it. Below are some of the most commonly asked questions.

YOUR QUESTIONS ANSWERED:

Q1: What causes bad breath?

Clinical studies have concluded that the vast majority of bad breath comes from the mouth and not the stomach, nor from food. Excess bacteria in the mouth, give off odorous gases which create bad breath.



Bacteria and debris shelter in between teeth

Q2: Is bad breath a common problem?

Yes. Bad breath is more widespread than you think. It is a modern day complaint either in its more common form of 'morning breath', from which most of us suffer, or the more severe problem of halitosis. Private trials involving hundreds of patients at The Fresh Breath Centre in London proved that the problem of bad breath is more common than originally thought.

Q3: How can I tell if I have bad breath?

Self detection is virtually impossible. The best way is to ask a close friend or confidant. You may be embarrassed by their response, but wouldn't you rather know? Many people go through life not knowing they have a problem.

Q4: How can I ensure that my breath is fresh throughout the day?

Ensure a good oral hygiene routine by removing plaque from your teeth every day. Plaque which forms on teeth is mainly bacteria. Regular removal greatly reduces your chance of developing gum disease and tooth decay. Bacteria shelter in between teeth where they are protected from regular brushing. This is the most important area to clean. There are several ways to remove plaque from between the teeth including dental floss or tape and wood-sticks. Ask your dentist or hygienist to check your technique.

Q5: Do mouthwashes eliminate bad breath?

Most mouthwash products have been developed to treat a wide range of problems rather than specifically to treat bad breath and ***often only disguise the problem temporarily.***

A COMMON PROBLEM

Q6: Why is Dentyl pH more effective?

It has been designed to physically remove the oral bacteria and debris that cause bad breath. *Dentyl pH was invented by the acknowledged world expert in bad breath (oral malodour), Prof. Rosenberg and developed by a dental school of international repute. Dentyl pH specifically addresses the problem of bad breath. Pioneering work by Dr Stemmer at The Fresh Breath Centre in London has shown Dentyl pH to be the most effective mouthrinse by far for the treatment of bad breath.*

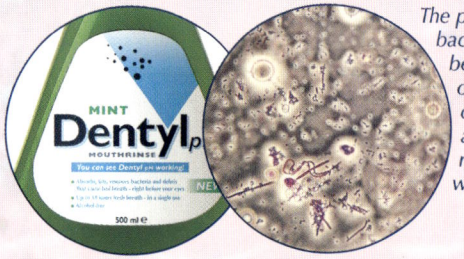
Professor Rosenberg and Dr Stemmer

Q7: Why is Dentyl pH so different?

First of all, it is different in formulation. It has two phases consisting of natural essential oils and a water solution. ***Both phases are anti-bacterial agents.*** *The bottle needs to be shaken vigorously to 'activate'. This combines the two phases and creates a formula which is much more powerful than the two individual parts. The bacteria and debris adhere to the formula and are visible in the discarded rinse. Once 'activated', Dentyl pH may become cloudy and frothy.* **This is normal and shows that Dentyl pH is working even harder.**

DENTYL pH IS THE NEXT GENERATION MOUTHRINSE

Dentyl pH needs to be shaken vigorously to activate the unique two-phase formula



The picture shows hundreds of bacteria and debris which have been bound to a single droplet of Dentyl pH. These are coloured by the formula and are visible in the discarded rinse. No other mouthrinse works in this way.

Q8: How do I know that Dentyl pH works?

You can see Dentyl pH working for yourself - every time you use it!
Dentyl pH is the only mouthrinse that visibly removes oral bacteria and debris.

Over fifteen years of research and development within an international dental school and many worldwide studies have been conducted to demonstrate it's effectiveness. Clinical studies spanning 10 years have shown Dentyl pH to be highly effective in the treatment of bad breath ***- for up to 18 hours in a single use.***

Less bacteria and debris means a cleaner mouth and the confidence of fresh breath

DENTYLpH - visibly removes bacteria and debris that cause bad breath

Dentyl$_{pH}$:

- is a **next generation mouthrinse** - a major breakthrough - offering a real solution to sufferers of bad breath.
- is **long lasting - effective for up to 18 hours** in a single use.
- is the **only mouthrinse where you can see the evidence for yourself** and feel the difference immediately.
- was developed by the leading expert in oral malodour.
- is supported by 15 years of research and 10 years of clinical studies.
- is alcohol free, contains fluoride to strengthen teeth and consists of **natural ingredients**.
- helps protect teeth and gums.
- **has the same pH value as saliva.** Some mouthrinses are acidic and can damage teeth and gums. Dentyl pH does not.

See the difference and feel the freshness

Dentyl pH
Seeing is Believing

Available in two refreshing flavours - mint and clove.

For further information please contact:
The Fresh Breath Company, 2 Devonshire Place, London, WIN IPA.
Telephone 0171 935 1492

BAD BREATH IS A COMMON PROBLEM

BUT IT DOESN'T HAVE TO BE

This leaflet explains what causes bad breath and how you can achieve long lasting fresh breath confidence.

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Dr. Mel's™ Shoe Deodorant*

Shoe Deodorant* Dr. Mel's™

Prevents odor build-up in shoes, boots and sneakers.

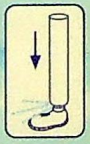
Most shoe odor begins and builds up deep inside the shoe.

Only Dr. Mel's™ Shoe Deodorant lets you spray deep inside all types of footwear quickly and easily.

Helps remove existing odors while preventing odor buildup.

Leaves footwear smelling clean and fresh.

To Apply:
Place little shoe inside your shoe and push down 2-3 times (see diagram).
Works best if used immediately after removing shoes.



Made in Israel by:
InnoScent Ltd.
2a Katzir St. Tel-Hashomer
Ramat-Gan 52656
*Patents Pend.

Environmentally Friendly

New

Easy-to-use Upside down sprayer

5 FL. OZ. (150ml)

File: prof-mel-rosenberg-box-02-folder-01-envelope-06-item-01.pdf

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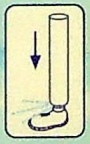

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Environmentally Friendly

New

Easy-to-use Upside down sprayer

5 FL. OZ. (150ml)

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interscan corporation

HALIMETER

FOR MONITORING VOLATILE SULFUR COMPOUNDS (VSC)

HALIMETER

In addition to its negative effects on a patient's social life, halitosis (oral malodor) can be an indicator of periodontal disease.

Volatile sulfur compounds (VSC)—primarily hydrogen sulfide and methyl mercaptan—are the main constituents of oral malodor. VSC are the by-products of both human and bacterial cellular degradation. Production of VSC increases with gingivitis and periodontitis.

VSC measurement with the HALIMETER has been clinically proven to be useful in the diagnosis of oral malodor **and** in patient screening for periodontal disease.

INTERSCAN's new HALIMETER provides rapid, accurate, and objective longitudinal VSC data—right at the chair.

THE HALIMETER IS

- Easy to use. Skilled personnel **not** required.
- Non-invasive
- Not cross-contaminating
- Small, portable and lightweight
- Based on sensor technology proven in industrial applications for over 20 years.

Housed in a rugged enclosure, the unit is equipped with a digital meter—giving VSC readings in parts per billion. An adjustable LED ladder display mimics the numerical reading.

The HALIMETER is provided with an integral pump, monitored at a rotameter, to draw the breath sample. A power switch, zero control, and sample inlet fitting complete the front panel layout.

THE HALIMETER IS EASY TO USE...

1) Insert the short end of a flexible drinking straw into the monitor inlet.
2) Instruct patient to place slightly opened mouth over straw, and breathe through the nose.
3) Record peak and steady-state VSC readings.

THAT'S IT!!!

YOUR NEXT STEP

Contact one of our representatives or distributors ...or the factory direct.

Let us put the HALIMETER to work for **you.**

SENSOR PRINCIPLE OF OPERATION

The INTERSCAN voltammetric sensor (U.S. Patent Number 4,017,373) is an electrochemical gas detector operating under diffusion controlled conditions.

Gas molecules from the sample are adsorbed on an electrocatalytic sensing electrode, after passing through a diffusion medium, and are electrochemically reacted at an appropriate sensing electrode potential. This reaction generates an electric current directly proportional to the gas concentration. This current is converted to a voltage for meter or recorder readout.

SPECIFICATIONS

Accuracy: ±2.0% of reading
±1 least significant digit
(Limited to accuracy of calibration)

Repeatability: ±0.5% of full scale

Minimum Detectability: 1.0% of full scale

Linearity: ±1.0% of full scale

Zero Drift: ±1.0% of full scale (24 hours)

Span Drift: Less than ±2.0% of full scale (24 hours)

Lag Time: Less than 1 second

Rise Time: 30 seconds to 90% of final value

Fall Time: 30 seconds to 10% of original value

Pump: Double diaphragm type, employing Scotch yoke and preloaded valve design.

Internal Tubing: ¼" OD x ⅛" ID (6.35 x 3.18 mm) polyethylene/ethyl vinyl acetate.

Tube Fittings: Kynar

Rotameter: Body—styrene-acrylonitrile
Float—stainless steel

Digital Display: 3½ digit, 0.5 inch (13 mm) liquid crystal.

LED Ladder Display: Green; yellow-green; yellow; orange; red; 5 mm. Peak wave lengths: 555, 570, 580, 605, 660 nm.

Enclosure: ABS, screw-together construction. Provided with tilt and swivel handle.

Analog Output: 0–100 mV full scale
Interface at phone jack/phone plug connection; phone jack provided with spring load dust/moisture cover; cable included.

Dimensions: 100 mm H x 275 mm W x 250 mm D
(4 x 10⅞ x 9⅞ in)

Weight: 3.2 kg (7 lb)

Power: 105–125 VAC, 50/60 Hz, 1.5 A or 205–240 VAC, 50/60 Hz, 0.75 A.

Calibration: Against standard gas mixture, or via INTERSCAN's Electronic Calibration Service.

interscan corporation *P.O. BOX 2496, CHATSWORTH, CA 91313-2496*
1 800 458-6153 (IN THE USA AND CANADA) 818 882-2331 FAX 818 341-0642

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סרט זה מוקדש
לסוניה ומורי ברברמן
שתמכו בנדיבותם
בהפקת הסרט

This film is dedicated to
Sonia and Murray Braverman
who generously
supported its production.

תסריט ובימוי
טלילה פרנק

הפקה
אלכסנדרה סלנצ'ר

שחקנים
דודו דותן
תאיר שור
ערן קהת
מל רוזנברג- נבו

צילום
לב קול

עריכה
ניר פינקלשטיין

אנימציה
ערן סקוטלסקי

ארט והלבשה
זהבית כרמל

יעוץ מקצועי
ד"ר נורמה רודניק

ניהול הפקה
עינב גיסינגר

תודה מיוחדת
הקרן הישראלית ע"ש תד אריסון
עבור תמיכתם הנדיבה בפרוייקט
זה ובפרוייקטים אחרים למען
בריאות השיניים של ילדי ישראל

Special thanks
to the **Arison Foundation** for their
kind support of this and other
projects for the benefit of oral health
of Israeli children

הקרן למען הילד
הסרט הופק על ידי החוג לקולנוע
וטלוויזיה, אוניברסיטת תל-אביב.

פרטים נוספים:
טל. 03-6429311
e-mail: melros@post.tau.ac.il

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וידאו זה נועד לצורכי הוראה ולימוד בלבד.

השיניים שמחשמלות

בכיכובו של:
דודו דותן

על פי סיפור מאת:
מל רוזנברג- נבו

תסריט ובימוי:
טלילה פרנק

אוניברסיטת תל-אביב
ביה"ס לרפואת שיניים ע"ש מוריס וגבריאלה גולדשלגר
והחוג לקולנוע וטלוויזיה
גאים להציג:

המכשפה והמברשת

בכיכובו של:
דודו דותן

תסריט ובימוי:
טלילה פרנק

על פי סיפור מאת:
מל רוזנברג- נבו

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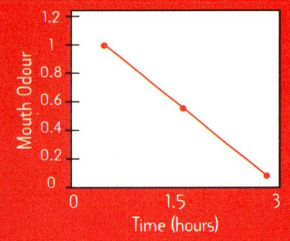
סולידוקס B

Breathanol™

משחת שיניים עם BREATHANOL™
למניעת ריח פה לשעות ארוכות

פריצת דרך עולמית בהיגיינת הפה

בניסוי IN VITRO הוכחה יצילותו של BREATHANOL™ כחומר טעם בעל פעילות גבוהה למניעת הווצרות ריחות פה.



בניסוי קליני שנעשה בבי"ס לרפואת שיניים באוניב' תל אביב בראשותה של דר' רונית גרינשטיין הוכחה יצילותה של משחת SOLIDOX B בהפחתת ריח פה למשך 3 שעות. ראה גרף מצורף.

אופן השימוש המומלץ:

1. לקבלת אפקט מירבי מומלץ לא לאכול או לשתות חצי שעה מתום הצחצוח.
2. להשגת תוצאות אופטימליות יש לצחצח היטב את השיניים בוקר וערב ולגרגר צשר שניות צם שארית המשחה בפה.
3. משחה זו מומלצת לשימוש לילדים ומבוגרים כאחד.

לקבלת פרטים נוספים בנושא ריחות פה נא לפנות
לדר' שרית לויטן, PhD, בטלפון: 03-5312608

נשמח לצנות אישית לכל פניה.

BOTTICO

רופא/ה יקר/ה,

חברת אגיס גאה להציג חידוש עולמי במשחת שיניים הצשוי להביא תוצלת רבה לפציינטים שלך. סולידוכס B משחת שיניים למניצת ריחות פה. סולידוכס B הינה פרי פיתוח משותף של מעבדות חב' אגיס לתרופות ופרופסור מל רוזנברג מומחה בעל שם עולמי לטיפול בריחות פה. סולידוכס B מכילה קומפלקס ייחודי של תמציות טעם טבציות בשם Breathanol™ אשר הוגש לרישום כפטנט עולמי.

ריח רע מהפה - halitosis, נגרם על ידי פצילות מיקרוביאלית בתוך חלל הפה, המתבטאת בפירוק אנאירובי של חלבונים צ"י חיידקים גרם שליליים. כמחצית מהאוכלוסיה הבוגרת סובלת מריחות פה לציתים וכרבע מאוכלוסייה בקביעות. רוב האנשים הסובלים מריח הפה אינם יודעים על כך, אינם מודעים לבצייתם ונחשפים לבציות התנכרות, לצג, אי נצימות ובציות בן זוגיות קשות. פצילותם של משחות שיניים ומי פה למיניהם, מבוססת בציקר צל "אפקט מיסוך" ומשלבת חומר טעם מנטולי חזק ומרכיב אנטיבקטריאלי במינון נמוך המותר צל פי החוק. בשלוש השנים האחרונות פותח בחברת INNOSCENT במסגרת חממת רד-רמות צל ידי פרופסור מל רוזנברג, חומר טעם חדש הנקרא BREATHANOL™ אשר לו פצילות מוגברת במניצת ריחות פה. יתרונו של המרכיב בהיותו חומר טעם אכיל וטבצי.

כושר אנטי בקטריאלי של משחת שיניים SOLIDOX B
בדיקות במעבדות CIBA בשוויץ.

Technical Report No. AM-PC 00/019
Determination of the antimicrobial efficacy of Solidox B toothpaste containing Ciba® IRGACARE®MP & BREATHANOL™ antimicrobial

Introduction - The bacteriostatic activity of Solidox B toothpaste with IRGACARE®MP & BREATHANOL™ have been determined under in-vitro agar cup test conditions (CG 126) against gram-positive bacteria (Staphylococcus aureus and Streptococcus mutans), and yeast (Candida albicans).
Conclusion - Solidox B toothpaste with IRGACARE®MP & BREATHANOL™ shows strong anti-bacterial effects against Staphylococcus aureus, Streptococcus mutans and Candida albicans.

Results (zone of inhibition in mm)

Samples	Staphylococcus aureus ATCC9144	Streptococcus mutans NCTC8196	Candida albicans ATCC10259
	ZI	ZI	ZI
Solidox B 1% suspension	22/22	5/5	6/6

סולידוכס B הינה משחת שיניים ייחודית ואיכותית התומכת ביצילות בניקויי שיניים יסודי ובמניצת ריחות פה. בחברת אגיס פותחה טכנולוגיה של אינקפסולציה של הארומה וה- BREATHANOL™ באופן כזה שמצמיד את הקפסולה אל ריריות הפה ומאפשר שחרור מבוקר של מנטרל הריחות לאורך זמן (slow release). זאת, יחד עם TRICLOSAN חומר אנטיבקטריאלי שנלחם באופן סלקטיבי בזיהומים ובחיידקים במינון 0.3% שהוא הגבוה ביותר המותר צ"י משרד הבריאות.

שילוב BREATHANOL™ בתמיכת TRICLOSAN באפקט סינרגיסטי, מהווים פריצת דרך עולמית בטיפול בריחות פה.

סולידוכס B מכילה בנוסף:

1

FLUORIDE (F) 1300-1500 ppm שזו הרמה המקסימלית המותרת לשימוש בתכשירים לא רפואיים למניצת צששת והתפתחות רובד חיידקים בשן.

2

DICALCIUM PHOSPHATE - חומר שיפשוף ABRASIVE צדין ביותר המשפשף ומבדיק את השן מבלי לשרוט את ציפוי האמייל ומפחית באופן משמצותי את הופצת האבנית (anti tartar).

3

GLYCERIN & SORBITOL - בריכוז 20% צל מנת ללחלח את חלל הפה (humectant) וצל ידי כך למנוע יובש ופצילות בקטריאלית מוגברת.

4

שילוב המרכיבים בסולידוכס B נותן אפקט מצוין של הלבנת שיניים וה ב ר ק ת ן (whitening).

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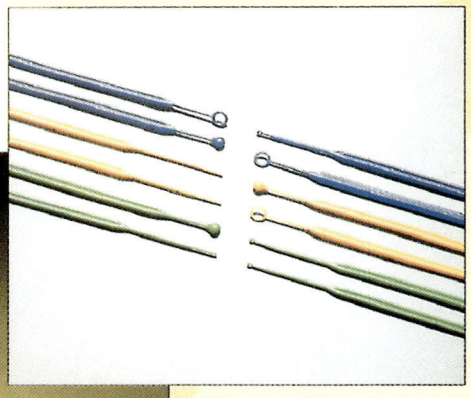
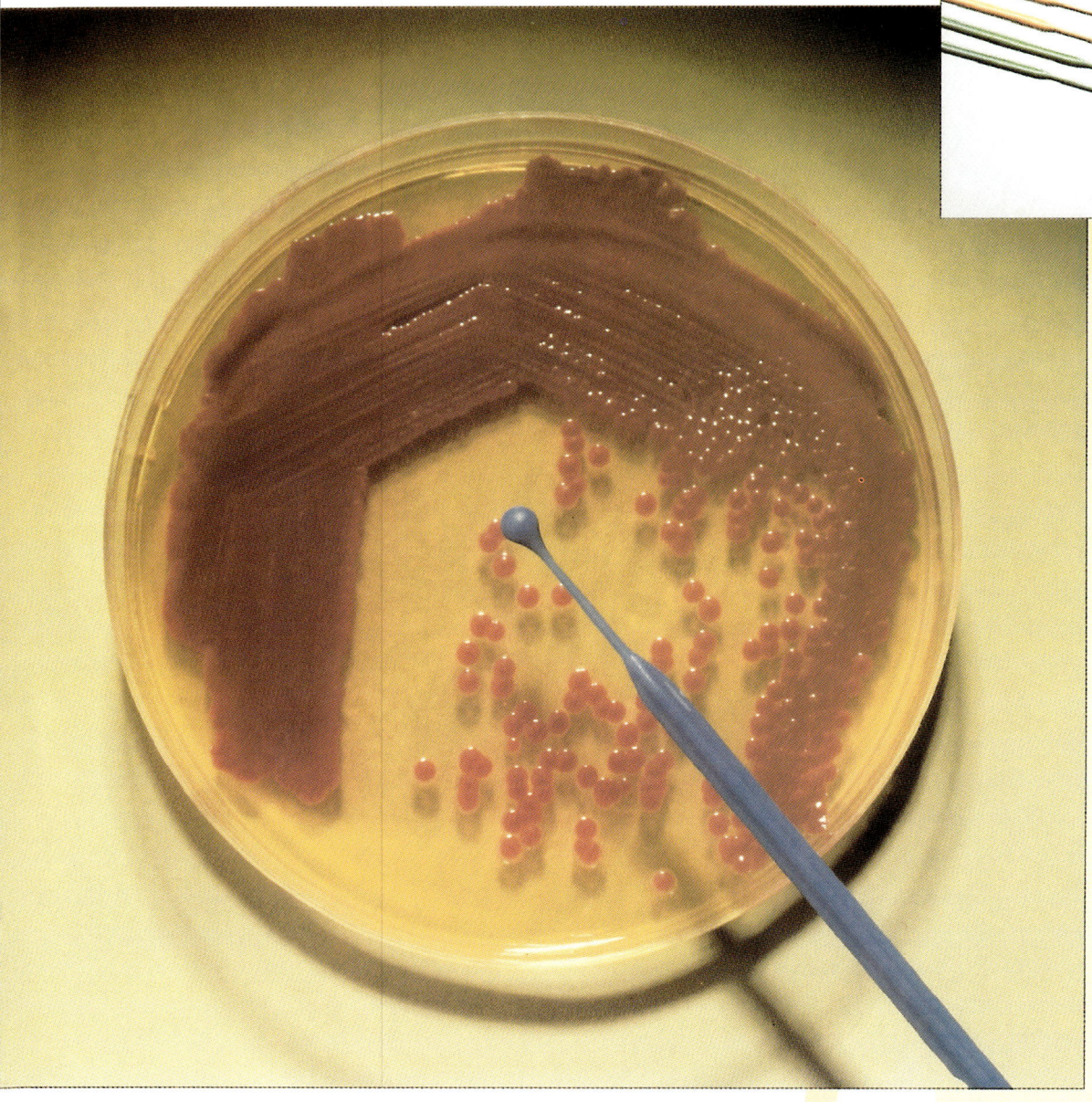
QuadLoop®





Safe

Time-Saving

Convenient

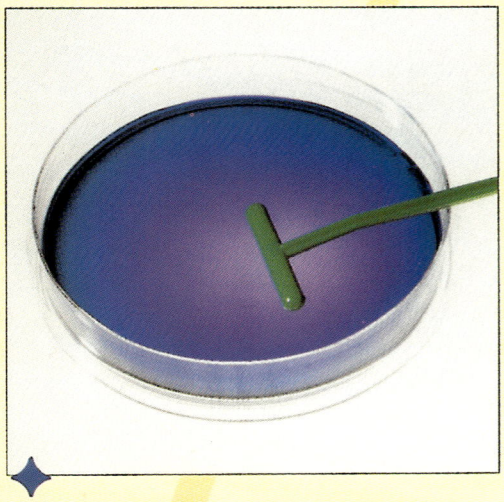
Economical

MINIPLAST
EIN-SHEMER

DISPOSABLE LABORATORY
PRODUCTS

Miniplast QuadLoop®

Sterile Disposable Inoculating Sphere/Loop or Sphere/Needle



Spreader®

Four dilution streakings with sphere.

The QuadLoop is a unique disposable inoculating device that allows perfect dilution streaking without flaming or changing loops.
QuadLoop 's unique **sphere/handle** form provides you with up to **4 sterile streaking surfaces** simply by turning the handle 90° after each streaking, thus exposing a fresh sterile streaking surface.
On the other end of the QuadLoop is a regular 10 µL or 1 µL loop for sampling fixed volumes, or, alternatively, a needle for picking and stabbing.
Miniplast QuadLoop is precision-molded from H.I.P.S. and is gamma-irradiated after packaging to ensure absolute sterility.

QuadLoop, In Its Various Combinations, Performs:

- Dilution streaking - **sphere.**
- Sampling a fixed volume from liquid - **10 µL, 1 µL loops.**
- Picking up individual colonies from a crowded plate - **needle.**
- Stabbing agar test tube - **needle.**
- Slant streaking - **sphere, loop.**

QuadLoop Advantages

- **Safe:** Eliminates the risks of gas flames, cross contamination and pathogenic aerosols.
- **Convenient:** No need for changing or flaming loops in order to streak a single plate. The sphere glides effortlessly, without ploughing or gouging the agar surface.
- **Time saving:** Dilution streaking takes 1/3 of the time compared to metal loops, and 1/2 of the time compared to other disposable loops. Sampling from liquid takes 1/2 of the time compared to metal loops.
- **Economical:** Time and energy saving.

QuadLoop Packaging

The pouch can be opened either end.
The entire contents of any one pouch should be used for one purpose only (sphere, loop or needle).

- QuadLoop **Patent** in 15 Countries Produced by **Miniplast Ein-Shemer**, a leading producer of disposable medical and laboratory products in Israel.

Ordering Information:

Cat. No.	Description	Per Bag	Per Case	Color
15-010-10 15-010-20	Sphere/ 10 µL Loop	10 Loops 20	720 Loops 1000	Blue
15-001-10 15-001-20	Sphere/ 1 µL Loop	10 20	720 1000	Green
15-011-10 15-011-20	Sphere/ Needle	10 20	720 1000	Orange
15-002-10 15-002-20	1 µL/ 10 µL Loop	10 20	720 1000	Blue
15-003-10 15-003-20	1 µL Loop/ Needle	10 20	720 1000	Green
15-012-10 15-012-20	10 µL Loop/ Needle	10 20	720 1000	Orange
15-004-01 15-004-05	Spreader	1 5	80 200	Green

✦ Also available in individual bags, or 50/bag.

MINIPLAST EIN-SHEMER
DISPOSABLE LABORATORY PRODUCTS

Miniplast Ein-Semer 1976.
Kibbutz Ein-Semer 37845 ISRAEL
Fax. 972-6-6371919
PH. 972-6-6374395/495
E-mail: miniplst@mishkei.org.il
http://members.xoom.com/miniplast

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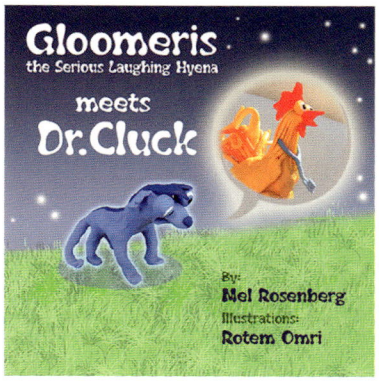
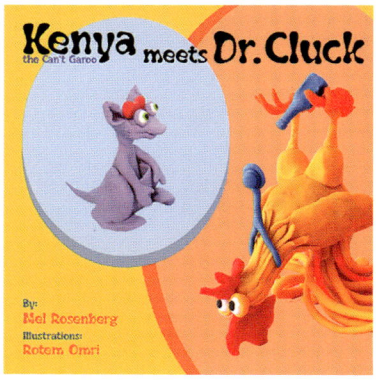
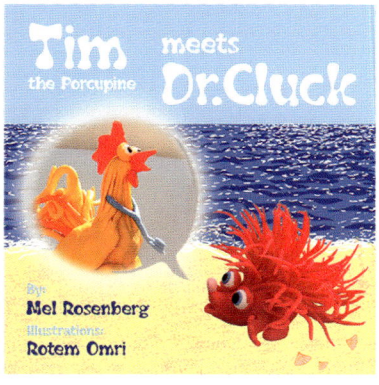
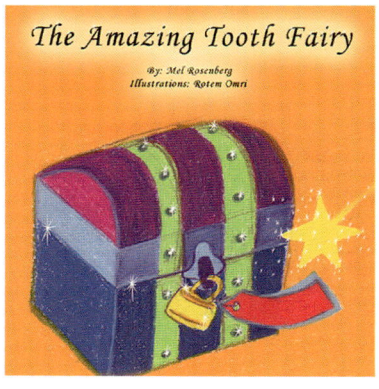
melTells with smells

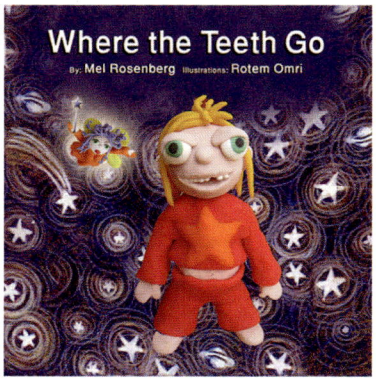
Dr. Mel Rosenberg's *smellicious* children's books combine fun and fantasy with important lessons about life, emphasizing dental and general health, optimism and well-being. The enchanting characters, lovingly illustrated by **Rotem Omri**, cast both spells and smells on children aged 4-9, and parents as well.

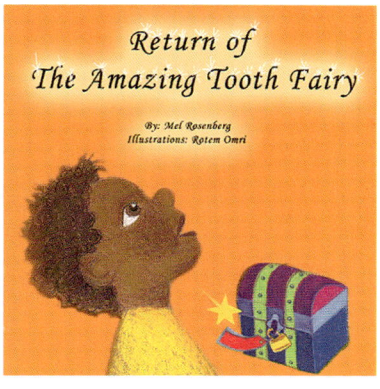


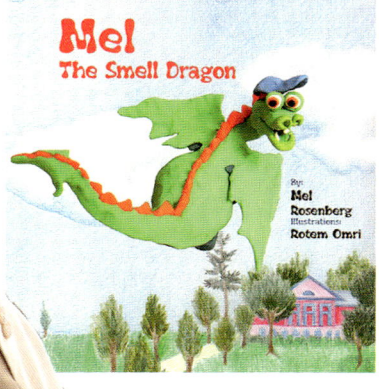


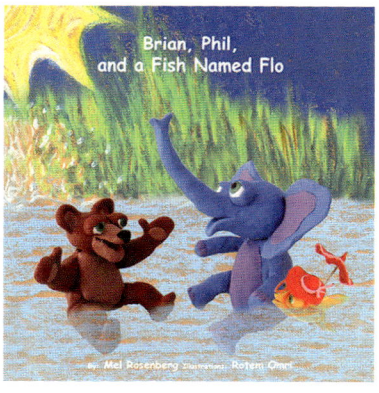












For further information, please contact:

Dr. Mel Rosenberg

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mel@meltells.com